Biological Evaluation

Regional General Permit for Installation of New Residential Overwater Structures; and Replacement, Repair, and Modification of Existing Residential Overwater Structures in the Columbia River between Rock Island and Chief Joseph Dams and in the Okanogan River from River Mile Five to its Mouth at the Columbia River within the State of Washington

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Section 1. Background and Project History

1.1 Regional General Permits

The Regional General Permit (RGP) is an alternative permitting procedure available to the District Engineer in accordance with the Department of the Army permitting regulations (33 CFR 325.2(e)(2)). The RGP may be used to authorize the construction of activities that are "similar in nature and cause only minimal individual and cumulative environmental impacts" (33 CFR 323.2(h)(1)).

The U.S. Army Corps of Engineers, Seattle District, Regulatory Branch (Corps) is proposing a series of RGPs in Washington State as a means of providing incentives to the public for constructing more fish-friendly structures. For those projects that would meet the parameters of the RGP, the amount of paperwork and time required to authorize the projects is greatly minimized from those of the standard permitting procedures. In addition, if the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) approve the programmatic biological evaluation for this RGP, the Endangered Species Act (ESA) consultation procedures will be preapproved, speeding up the overall application review process.

1.2 Corps Review Procedures

In order to be authorized by this RGP, an applicant will be required to meet the parameters of the project descriptions (Section 2.2), the conservation measures (Section 7), and any additional requirements requested by USFWS and NMFS and agreed to by the Corps. The applicant will be required to submit a Specific Project Information Form (SPIF) and drawings to the Corps in order for the Corps to confirm that the project meets the RGP. A proposed SPIF is included in Appendix C of this document. The Corps will review the proposed SPIF and confirm in writing if the project is authorized by the RGP.

In the Seattle District, Regulatory Branch, there are two primary application reviewers – the project manager and the environmental analyst. The project manager, a generalist in background, oversees the application review process, coordinating with the applicant and state and federal agencies as necessary. The environmental analyst – a technical expert – reviews the permit decisions, jurisdictional determinations, and biological assessments for scientific accuracy and consistency with Corps regulations. With workload separated geographically, the environmental analysts work with project managers in a team leader role and review the project manager's assessments and evaluations.

The Corps project manager and environmental analyst will review the activity and SPIF to determine if it meets the RGP and if the activity may be authorized under the RGP programmatic consultation. The project manager will review the Construction Specifications and Conservation

Measures for each activity as outlined in the RGP programmatic consultation. The project manager's review will be signed off by the environmental analyst.

1.2.1 Monitoring and Tracking

The Corps will submit regular tracking and monitoring reports to USFWS and NMFS on the use of the RGP. If USFWS and NMFS approve this programmatic biological evaluation for the RGP, the monitoring reports will be submitted 3 months after approval, 6 months after approval, and then annually for a period of 5 years.

The monitoring report will include copies of all SPIFs submitted for the period covered, a summary of all projects authorized, a discussion of any compliance or enforcement issues associated with the RGP and how these issues were resolved, and proposals for any revisions to the consultation. Revisions may include, but are not limited to, changes in general conservation measures, changes in approved work windows, changes in specific project parameters, and/or additional activities.

1.2.2 Compliance and Enforcement

When an activity is approved under the RGP programmatic consultation and authorized by an RGP, the Corps, USFWS, and NMFS will ensure that all conditions of the completed RGP programmatic consultation, including the reasonable and prudent measures (RPMs) and terms and conditions of the Programmatic Biological Opinion, are implemented in their entirety.

To ensure compliance with the RGP programmatic consultation conditions, the Corps will conduct random site evaluations of activities authorized under the RGP programmatic consultation. Through notification by anonymous complainants, the Corps may specifically target an individual activity to determine if it is in compliance with the conditions as authorized under the RGP programmatic consultation. If the Corps determines that a permittee is in violation of the RGP programmatic consultation conditions or has deviated from the authorization, the Corps will proceed with an enforcement action against the permittee per Corps enforcement regulations and in coordination with USFWS and NMFS. In some instances, the Corps, in coordination with USFWS and NMFS, may cite the contractor with a violation, if the contractor is repeatedly involved in deviations of permit conditions or violations.

Enforcement actions by the Corps may include, but are not limited to, revisions to the activity construction and/or design, implementation of mitigation measures to compensate for unacceptable adverse impacts, revocation of the Department of the Army Regional General Permit authorization, removal of the constructed activity, and/or fines.

If a permittee is in violation of the RGP programmatic consultation conditions or has caused unauthorized take of a listed species, USFWS and NMFS may implement enforcement actions against the permittee as per their regulations and procedures.

1.3 Discussion of Past Relevant Consultations

Table 1-1 shows the number of Department of the Army permits finalized for installation of new residential overwater structures for the period January 1, 1997 through September 27, 2002. The table also indicates the total number of applications pending at the Corps as of September 28, 2002 for these activities.

Table 1-1. History of Permits by Activity for New Overwater Structures

New Private or Joint-Use Overwater Structure	1997	1998	1999	2000	2001	2002	Pending
Pier	1	0	0	0	0	0	1
Float	2[a]	0	1	0	1	0	1
Ramp and float	4	3	0	0	3	4	6
Pier and ramp	1	1[a]	0	0	0	0	0
Pier, ramp, and float	2	4	1	0	1	5	2
TOTAL	10	8	2	0	5	9	10
[a]Number of permits finalized for community-use projects							

Table 1-2 shows the number of Department of the Army permits finalized for repair or replacement of residential overwater structures for the period January 1, 1997 through September 27, 2002. It is probable that more repair and replacement activities occurred than are shown in the table. The Nationwide Permit (NWP) 3 authorizes the "repair, rehabilitation, or replacement of currently serviceable structures or fill." Under this NWP, the Corps did not require the applicant/permittee to submit a preconstruction notification (PCN) of the activity during the period from November 13, 1986 to June 2000. Work could proceed without contacting the Corps if all conditions were met; therefore, the exact number of repair activities is unknown. However, since June 2000, a PCN requirement has been in effect for NWP 3 activities occurring in "critical resource waters," including designated critical habitat. Because the mid-Columbia and Okanogan Rivers are critical resource waters, the Corps must be contacted prior to an applicant/permittee commencing repair work. Additionally, General Condition 11 of the NWP requires notification to the Corps of all activities that occur in the vicinity of ESA-listed species and their designated critical habitat. Therefore, in the future, it will be possible to more accurately track the number of repair activities in the mid-Columbia and Okanogan Rivers. The number of applications for repair work is expected to increase.

Table 1-2. History of Permits by Activity for Existing Overwater Structures

Repair or Replace Private or Joint-Use Overwater Structure	1997	1998	1999	2000	2001	2002	Pending
Pier	1	0	0	0	0	0	0
Float	0	0	0	0	0	1	0
Ramp and float	0	0	1	0	0	0	0
Pier and ramp	0	0	0	0	0	0	0
Pier, ramp, and float	0	0	0	0	1	0	0
TOTAL	1	0	1	0	1	1	0

Section 2. Description of the Action and Action Area

2.1 Description of the Purpose and Need

The purpose of this RGP is to expedite the authorization of recurring activities that are similar in nature and have minor individual and cumulative adverse impacts on the aquatic environment. This RGP would minimize the amount of paperwork and time required to authorize qualifying projects by making available for public use an already issued Department of Army general permit that includes a concluded Endangered Species Act Section 7 consultation, Essential Fish Habitat consultation, and water quality certification.

2.2 Description of Action

Projects to be authorized under this RGP include installation, replacement, repair or modification of a residential overwater structure consisting of a pier and/or ramp and/or float(s). Overwater structures include piers, ramps, floats, and their associated structures, such as chain and anchors for floats, ladders, and swim steps. A modified structure may be different in kind from the existing structure. For example, an existing float may be modified to a pier, ramp and float. The RGP would authorize the installation, replacement, repair or modification of one overwater structure per upland residential waterfront property owner <u>or</u> one joint-use overwater structure for two or more adjacent waterfront property owners. The proposed project must comply with the conservation measure and construction specifications detailed in Section 7 of this report.

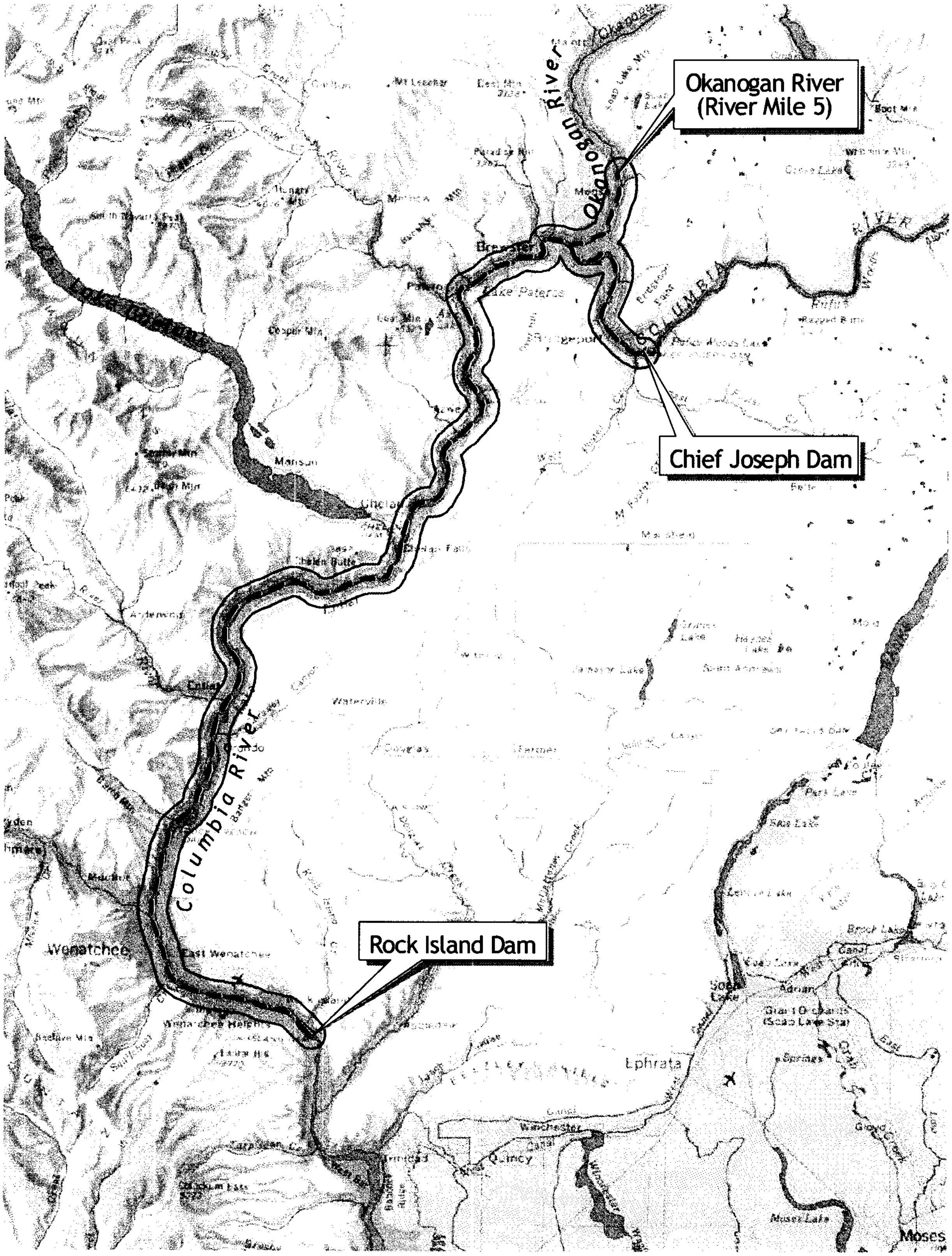
2.3 Description of the Action Area

The action area (Figure 1) includes all areas that could potentially be affected by the activities authorized by the RGP, including the implementation of the required conservation measures described in Section 7. The impact area within the action area will vary based on each species under consideration. The RGP is intended to cover the specified activities in the Columbia River between Rock Island and Chief Joseph Dams and in the Okanogan River from River Mile 5 to its mouth at the Columbia River within Chelan, Douglas, and Okanogan Counties in the State of Washington.

For terrestrial wildlife species, the limits of the impact area for individual projects would include all areas within 1 mile of the work area. Beyond 1 mile, noise, dust, air quality, and habitat impacts would not affect listed wildlife species.

For plants, the action area for individual projects would be limited to approximately 100 yards of the limits of the work area. Beyond 100 yards, impacts from project activities would not affect listed plant species.

For fish and aquatic wildlife species, the action area for individual projects would be no more than 1 mile downstream and no more than 0.5 miles upstream of the project area boundary. Beyond these limits, project impacts on water quality, noise, flooding characteristics, and habitat would not affect listed fish and aquatic wildlife species.



Source: Washington Atlas and Gazeteer, DeLorme Publishing (1998)

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Figure 1
Project and Action Area

Section 3. Status of the Species and Critical Habitat

3.1 Status of Species

Table 3-1 indicates federally listed species covered under this biological evaluation (BE) that may occur or are likely to occur in the action area and the status of designated critical habitat.

Table 3-1. Summary of Species Potentially Found in the Action Area

Listed Species or Critical Habitat Unit	Status	Designated Critical Habitat
Bull trout Columbia River DPS	Threatened	Proposed
Chinook salmon, Upper Columbia River Spring Run ESU	Endangered	Under Development
Steelhead, Upper Columbia River ESU	Endangered	Under Development
Bald eagle	Threatened	None Designated
Canada lynx	Threatened	None Designated
Gray wolf	Endangered	None Designated in Washington State
Grizzly bear	Threatened	None Designated
Ute ladies'-tresses	Threatened	None Designated

3.2 Description of Species

3.2.1 Columbia River Bull Trout

Bull trout of the Columbia River Distinct Population Segment (DPS) were designated as threatened under the ESA on June 10, 1998 (63 FR 31647). All naturally spawning populations of bull trout in the continental United States were included in the listing. On January 9, 2001 (66 FR 1628), Washington stocks of Dolly Varden were also listed as threatened because of their similarity in appearance to bull trout.

The decline of the species can be attributed to increases in water temperature, poor water quality, degradation and fragmentation of habitat, and over-harvesting. Bull trout are also threatened by interactions with nonnative fishes, such as brook trout (with which they hybridize), and with numerous introduced species that prey on bull trout or compete for limited resources.

3.2.1.1 Biological Requirements

Bull trout exhibit resident and migratory life history strategies through much of their current range (Rieman and McIntyre 1993), although anadromous bull trout may have been excluded from the action area by human-made barriers. Resident bull trout complete their life cycles in the tributary streams in which they spawn and rear. They are strongly influenced by water temperature and are seldom found in streams exceeding summer temperatures of 18°C. Bull trout eggs require very cold incubation temperatures for normal embryonic development, and cold water temperatures may result in higher egg survival rates and faster growth rates in fry (Pratt 1992).

All life history stages of native char are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and pools. Spawning typically occurs in late summer and early fall in low gradient streams with loose, clean gravel and water temperatures between 5 and 9°C (WDFW 2000). Many spawning areas are associated with cold water springs or areas where stream flow is influenced by groundwater (USFWS 1997). Over-wintering habitat varies with life history form, but always requires cool, clean water with insects, macrozooplankton, and small fish for larger adults (WDFW 2000).

Bull trout are opportunistic feeders with food habits related primarily to their life history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macrozooplankton, amphipods, mysids, crayfish, and small fish. Subadult bull trout rapidly convert to eating fish, feeding indiscriminately on other fish species in the area (WDFW 2000).

3.2.1.2 Designated Critical Habitat

In November 2002, the USFWS proposed critical habitat for bull trout in the Columbia River Basin and the Kalamath River in Oregon. The proposed critical habitat includes 18,471 miles of streams in Oregon, Washington, Idaho, and Montana, along with 532,721 acres of lakes and reservoirs in those four states. The proposed critical habitat designations apply only to the waterways, and adjacent lands are not included. The Columbia River (including the section between Rock Island Dam and Chief Joseph Dam) is included in the proposed critical habitat designations for bull trout.

Critical habitat is defined to include (a) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical or biological features that are essential to the conservation of the species, and which may require special management considerations or protection; and (b) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The physical and biological features include, but are not limited to: space for individual and population growth, and for normal behavior; food, water, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

USFWS determined the primary constituent elements for bull trout from studies of their habitat requirements, life-history characteristics, and population biology. These primary constituent elements are as follows.

- Permanent water having low levels of contaminants such that normal reproduction, growth and survival are not inhibited.

- Water temperatures ranging from 2 to 15°C (36 to 59°F), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local groundwater influence.

- Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures.

- Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine substrate less than 0.63 cm (0.25 in) in diameter and minimal substrate embeddedness are characteristic of these conditions.

- A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, a hydrograph that demonstrates the ability to support bull trout populations.

- Springs, seeps, groundwater sources, and subsurface water connectivity to contribute to water quality and quantity.

- Migratory corridors with minimal physical, biological, or chemical barriers between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows.

- An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

- Few or no predatory, interbreeding, or competitive nonnative species present.

Critical habitat extends from the bankfull elevation on one side of the stream channel to the bankfull elevation on the opposite side. If bankfull elevation is not evident on either bank, the ordinary high-water line as defined by the Corps in 33 CFR 329.11 shall be used to determine the lateral extent of critical habitat. Adjacent floodplains are not proposed as critical habitat. However, it should be recognized that the quality of aquatic habitat within stream channels is intrinsically related to the character of the floodplains and associated riparian zones, and human activities that occur outside the river channels can have demonstrable effects on physical and biological features of the aquatic environment. The lateral extent of proposed lakes and reservoirs is defined by the perimeter of the water body as mapped on standard 1:24,000 scale maps (comparable to the scale of a 7.5 minute U.S. Geological Survey Quadrangle topographic map).

3.2.1.3 Factors of Decline

Data regarding the presence of bull trout in the upper Columbia River are incomplete. Although bull trout may pass the numerous human barriers on the river in both upstream and downstream directions, the extent to which they use the Columbia River is unknown. Bull trout have been recorded in the Wenatchee, Entiat, and Methow watersheds. The status of bull trout in the

Okanogan watershed is unknown, although it is possible that hybridization with introduced brook trout may have caused a functional extinction in some creeks that feed the Okanogan mainstem (NMFS et al.1998). Speculation regarding the decline of bull trout numbers in the action area has included increased water temperatures, poor water quality, degraded stream habitat, hybridization with brook trout, hybridization and competition with nonnative species, and over-fishing (USFWS 1997) or a combination of the above factors. Other potential causes may include fragmentation of habitat as barriers to fish passage have been constructed in the Columbia River. Several stocks of bull trout in western Washington have also become fragmented where lower rivers are no longer utilized and free movement has been restricted. A number of stocks have been isolated above dams in river systems where they once roamed freely (WDFW 2000).

3.2.1.4 Population Trends of the Species

A 1998 Washington Department of Fish and Wildlife (WDFW) study found 80 bull trout/Dolly Varden populations in Washington: 14 (18%) were healthy; two (3%) were in poor condition; six (8%) were critical; and the status of 58 (72%) stocks was unknown. In the Upper Columbia 9% were healthy, 1% depressed, 6% critical, and 34% unknown. The study reported that native char are rarely observed in the mainstem Columbia River and are presumed extirpated from the Chelan, Lower Yakima, and Okanogan basins. WDFW is continuing to evaluate the status of the stocks (WDFW 1998).

3.2.2 Upper Columbia Spring Run Chinook Salmon

Upper Columbia River spring run chinook salmon were designated as endangered under the ESA in March 1999 (64 FR 14308). This Evolutionarily Significant Unit (ESU) includes spring-run chinook populations found in Columbia River tributaries between Rock Island and Chief Joseph dams, including the Wenatchee, Entiat, and Methow River basins. Spring run chinook salmon and their progeny from the following stocks that are raised in hatcheries are considered part of the ESU: Chiwawa River, Methow River, Twisp River, Chewuch River, White River, and Nason Creek.

The decline of the species can be attributed to increases in loss of genetic diversity between populations, continued homogenization, increases in water temperature, poor water quality, degradation and fragmentation of habitat, and overharvesting (NMFS 2002, NMFS 1998)

3.2.2.1 Biological Requirements

Upper Columbia River spring run chinook salmon are stream-type anadromous salmonids with a longer freshwater residency and extensive offshore migrations before returning to their natal streams in the spring or summer (NMFS et al. 1998). Stream-type juveniles are much more dependent on freshwater stream ecosystems because of their extended residence in these areas. At the time of saltwater entry, stream-type (yearling) smolts are much larger, averaging 73-134 mm depending on the river system, than their ocean-type (subyearling) counterparts and are therefore able to move offshore relatively quickly. From 1 to 6 years later, the adults enter the tributaries to the action area between late April through July. They prefer to reside in deep pools and under cover until they begin spawning. Adults will spawn near these areas or move upstream into smaller tributaries. Spawning occurs from late July through September and peaks in late August (Chapman et al 1995).

Adult female chinook will prepare a spawning bed, called a redd, in a stream area with suitable gravel composition, water depth and velocity. The adult female chinook may deposit eggs in four to five "nesting pockets" within a single redd. After laying eggs in a redd, adult chinook will guard the redd from 4 to 25 days before the adults die. Chinook salmon eggs hatch, depending upon water temperatures, between 90 to 150 days after deposition. Eggs are deposited at a time to ensure that young salmon fry emerge during the following spring when the river or estuary productivity is sufficient for juvenile survival and growth (NMFS 2001a). Upon emergence, fry actively feed on aquatic insects and terrestrial macroinvertebrates (Cederholm et al. 2000).

Overwintering habitat varies with life history form but always requires cool, clean water with insects, macrozooplankton, and small fish for larger adults. Juvenile chinook are known to move out of tributaries and into main rivers to over-winter (Cederholm et al. 2000).

3.2.2.2 Designated Critical Habitat

Critical habitat for Upper Columbia spring run chinook is currently under development. On April 30, 2002, the U.S. District Court for the District of Columbia approved a NMFS consent decree withdrawing a February 2000 critical habitat designation for this and 18 other ESUs.

3.2.2.3 Factors of Decline

Chinook salmon have experienced serious declines in abundance in the past several decades because of both natural and human factors. Forestry, agriculture, mining, and urbanization have simplified, degraded, and fragmented habitat. Water diversions for flood control, agriculture, domestic, and hydropower purposes have greatly reduced or eliminated historically accessible habitat (NMFS 1998).

Introductions of nonnative species and habitat modifications have increased predator populations in the action area. Exposure to numerous viral, bacterial, and parasitic organisms during their life cycle has been exacerbated by poor water quality conditions such as low water flows and higher temperatures. The implementation of extensive hatchery programs has increased competition with native stocks. The effects of these hatchery programs are poorly understood and, while they could play an important role in the recovery of the chinook, they may be contributing negative impacts on native, naturally reproducing salmon (NMFS 1998).

3.2.2.4 Population Trends of the Species

The rivers in this area primarily drain the east slope of the northern Cascade Mountains and include the Wenatchee, Entiat, Methow, and Okanogan River basins.

Chinook salmon return to the Wenatchee River from late April through June. Spawning begins in early August in the upstream reaches of the tributaries and continues downstream through September. A portion of the juvenile population may move downstream gradually during summer, fall, and winter rearing (NMFS et al 1998). While moving downstream the juveniles encounter increasingly altered conditions where shelter habitat and food supply have been reduced due to loss of riparian areas. Shoreline development is the greatest in-basin habitat problem and probably the greatest threat to these salmon (NMFS et al 1998).

Upper Columbia River spring run chinook return to the Entiat River from late May through July. Spawning begins in early August in the upstream reaches and continues downstream through September. The spring run chinook in this river are listed as depressed in the Salmon and Steelhead Stock Inventory (SASSI) (WDFW et al 1993). Fish passage into the Entiat River was significantly impeded for several years by a log mill dam built across the river near Ardenvoir and a power generation dam in the lower river (Chapman et al. 1994, WNF 1996). Salmon pass eight major hydroelectric dams on the mainstem Columbia River. In general, spawning and rearing habitat in the upper reach of the Entiat is considered to be in very good condition, and it is poor in the lower Entiat as it nears the action area due to increased development (NMFS et al. 1998).

Upper Columbia River spring run chinook populations in the Methow River are listed as depressed in SASSI (WDFW et al 1993). These salmon return from late May through July and spawn from August through September. The mainstem Methow and its tributaries can be a hostile environment for salmonids during the late summer low flows and in the winter as temperatures and flow extremes during both summer and winter may cause significant mortality (NMFS et al. 1998).

There are no indications that spring run chinook salmon currently use the Okanogan drainage though, historically, records indicate their presence prior to 1920 (NMFS et al. 1998).

NMFS calculated an estimate of median population growth rate, risk of extinction, and the likelihood of meeting recovery goals. This estimation was based on population trends observed during a base period beginning in 1980 and including the 1998 adult returns. For the Upper Columbia River spring chinook salmon ESU, NMFS estimates that the median population growth rate over the base period ranges from 0.84 to 0.85, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of native wild stocks. A value equal to 1.00 indicates that a population is in equilibrium, neither increasing nor declining. A value less than 1.00 indicates that a population is declining (NMFS 2002).

3.2.3 Upper Columbia River Steelhead

The Upper Columbia River steelhead was listed as an endangered species on August 18, 1997. The ESU includes all naturally spawned populations of steelhead (and their progeny) in streams in the Columbia River Basin upstream from the Yakima River, Washington, to the U.S.-Canada border. Wells Hatchery stock steelhead are also part of the listed ESU (62 FR 43937).

Upper Columbia River steelhead depend more on the freshwater environment than most salmon species, relying heavily on rivers and streams as nursery areas. They penetrate farther into headwater areas and do not usually die after spawning.

3.2.3.1 Biological Requirements

Because of their varied length of freshwater residence, their variable ocean residence, and their spatial and temporal spawning distribution within a watershed, steelhead exhibit an extremely complex mosaic of life history types. Such life history diversity is an effective strategy for ensuring the long-term viability of population. Conversely, it also limits the population's ability to exploit favorably anomalous conditions (NMFS et al. 1998). Steelhead adults migrate into the mid-Columbia River tributaries in both fall and spring after spending 1 to 3 years in the ocean (Cederholm et al. 2000). Summer runs dominate in the interior Columbia River. Spawning occurs primarily in late March and fry emerge in late spring to August. Fry and smolts disperse downstream in late summer and fall. Their diet consists mainly of freshwater invertebrates and terrestrial macroinvertebrates. During freshwater rearing, juvenile steelhead are often found in riffle environments. Generally, juvenile steelhead spend 2 years in freshwater before smolting and spend between 1 and 4 years in the ocean (Cederholm et al. 2000).

The life history of the steelhead is closely associated with complex forms of cover, undercut banks, boulders, and pools. Shoreline riparian habitat is essential in providing the necessary food and shelter for over-wintering juveniles (Cederholm et al. 2000).

3.2.3.2 Designated Critical Habitat

Critical habitat for the Upper Columbia River steelhead is currently under development. On April 30, 2002, the U.S. District Court for the District of Columbia approved a NMFS Consent Decree withdrawing a February 2000 critical habitat designation for this and 18 other ESUs. The ESA Section 9 take prohibitions apply to this ESU.

3.2.3.3 Factors of Decline

The initial and major factor in the decline of the Upper Columbia River steelhead was the construction of multiple barriers to passage up the Columbia River. During construction of multiple dams the fish were not able to reach their natal streams resulting in an undetermined level of stock mixing within the upper Columbia River fish (NMFS 1996).

The status of steelhead in the action area indicates that habitat degradation in the region is pervasive. Further research indicates that factors outside the watersheds that feed the action area, primarily in the mainstem Columbia, have significant impacts to wild steelhead (NMFS et al. 1998). These factors include the present or threatened destruction, modification, or curtailment of habitat or range, over-utilization for commercial, recreational, scientific, or educational purposes, disease, predation, inadequacy of existing regulatory mechanisms, and natural and human factors (i.e., barriers, dredging).

3.2.3.4 Population Trends of the Species

The rivers in this area primarily drain the east slope of the northern Cascade Mountains and include the Wenatchee, Entiat, Methow, and Okanogan River basins.

Estimates of historical (pre-1960s) abundance specific to the action area are available from fish counts at dams. Counts at Rock Island Dam from 1933 to 1959 averaged 2,600-3,700. This suggests a pre-fishery run size in excess of 5,000 adults for tributaries above Rock Island Dam (NMFS et al. 1998). However, runs may have already been depressed by lower Columbia River fisheries at this time. The following recent 5-year (1989-93) average natural escapement estimates are available: 800 steelhead in the Wenatchee River and 450 steelhead in the Methow and Okanogan Rivers. Recent average total escapement estimates for these stocks were 2,500 and 2,400, respectively. Average total run size at Priest Rapids Dam for the same period was approximately 9,600 adult steelhead (NMFS 1996). Natural steelhead stock/recruitment relationships show little or no replacement in the Entiat, and Methow Rivers. Very few wild steelhead currently use the Okanogan River though it has been asserted that historically very few steelhead used this river (NMFS et al. 1998).

The Upper Columbia River steelhead is presently in danger of extinction. While total abundance of populations within the action area has been relatively stable or increasing, this appears to be true only because of major hatchery supplementation programs. The major concern for the action area is the clear failure of natural stocks to replace themselves. There are strong concerns about problems of genetic homogenization due to hatchery supplementation within and surrounding the action area. There is also concern about the apparent high harvest rates on steelhead smolts in rainbow trout fisheries and the degradation of freshwater habitats within the region, especially the effects of grazing, irrigation diversions, and hydroelectric dams (NMFS 1996).

3.2.4 Bald Eagle

The bald eagle is listed as threatened by both the USFWS and WDFW. Recovery efforts over the last 25 years, including habitat protection, development and implementation of the Pacific Bald Eagle Recovery Plan (USFWS 1986), and the banning of dichloro-diphenyl-trichloroethane (DDT) and other organochlorine pesticides, have led to increases in both the number and range of bald eagle populations. The species breeds across much of Canada, the Pacific Northwest, throughout the Great Lakes states, and along the Eastern and Gulf coasts. Washington hosts one of the largest populations of wintering bald eagles in the lower 48 states as well as one of the largest populations of nesting pairs. The majority of nesting bald eagles in Washington occur west of the Cascade Mountains (Smith et al. 1997).

Early declines in bald eagle populations in Washington and nationwide were attributed to human persecution and destruction of riparian, wetland, and conifer forest habitats, as well as reductions in prey sources. However, the widespread use of organochlorine pesticides that caused eggshell thinning and subsequent reproductive failure was the most important factor in the decline of the species (Detrich 1985).

3.2.4.1 Biological Requirements

In Washington, bald eagles are most common along the coasts, major rivers, lakes, and reservoirs (USFWS 1986). Unlike wintering bald eagles in western Washington, which feed primarily on salmon carcasses, wintering bald eagles in eastern Washington feed mainly on waterfowl, upland birds, and carrion, although fish are taken when available (Fielder 1982, Fielder and Starkey 1986).

Bald eagles typically nest in stands of old-growth trees near large water bodies that are free of disturbance. Nest trees are usually located in uneven-aged stands containing old-growth components and often have broken or forked tops to support the nest. An uneven canopy is important for allowing flight into and out of both the nest and perch trees located within the nest stands (Rodrick and Milner 1991). Adults tend to use the same breeding areas in successive years, and often utilize the same nest (Federal Register July 6, 1999).

Wintering bald eagles are known to minimize energy expenditures while obtaining an adequate daily meal (Stalmaster 1987). To accomplish this objective, most individuals fly from night roosts to perch sites located near foraging opportunities along rivers, lakes, and reservoirs that support potential prey such as fish or waterfowl. Bald eagles often roost communally during the winter, typically in a stand of mature trees with an open branching structure and well developed canopies (Rodrick and Milner 1991). Winter roost areas are usually isolated from human disturbance (Johnsgard 1990).

3.2.4.2 Designated Critical Habitat

The USFWS has not designated critical habitat for the bald eagle (USFWS 1986).

3.2.4.3 Factors of Decline

Bald eagles were typically very widespread in North America, breeding in nearly all of the conterminous states, in addition to Canada and Alaska. The first major decline in bald eagle populations began in the mid- to late 1800s when widespread shooting for feathers and trophies led to extirpation of eagles in some areas (Federal Register July 6, 1999). Many eagles were trapped or poisoned by ranchers and by federal animal damage control agents attempting to control livestock predators. Nests in some localities were decimated by egg collectors (Stinson et al. 2001). Hunting and fishing reduced some of the bald eagles' prey base, and forest clearing and shore development resulted in a substantial loss of nesting and foraging habitat into the 1940s (Federal Register July 6 1999).

In the late 1940s, organochlorine compounds (including DDT) began to be used to control mosquitoes along coastal and wetland areas and as a general crop insecticide. Shortly thereafter, the reproductive success of bald eagles plummeted. Only in the 1970s was it determined that dichlorophenyl-dichloroethylene (DDE), the principal breakdown product of DDT, was accumulating in the fatty tissues of adult female bald eagles, impairing their ability to release the calcium necessary for eggshell formation. Thin shells led to reproductive failure and a steady decline in the population until the early 1970s when DDT was banned by the EPA (Federal Register July 6, 1999).

The reasons for the bald eagle decline in Washington mimic the nationwide factors described above. Although DDT was banned in 1972, studies completed in two regional populations along the lower Columbia River and Hood Canal found significant concentrations of DDE and/or PCBs in eggs of bald eagles. The continuing presence of these substances may contribute to low reproductive success (Anthony et al. 1993, Mahaffy et al. 2001). Although eagles are protected under the ESA, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, as well as a variety of Washington State laws, illegal hunting and black market trading may continue (Stinson et al. 2001).

Large trees that provide nesting habitat for bald eagles are a diminishing resource in Washington State, particularly near shorelines where waterfront property continues to be a valued commodity in the residential development market. Almost 80% of Washington's shoreline is privately owned. Despite restrictions on clearing of habitat imposed by Washington's Shoreline Management Act, the loss of large trees used for nesting, perching, and roosting has been, and will continue to be, a limiting factor for breeding and wintering populations of bald eagles within the state (Stinson et al. 2001). Finally, changes in water quality and habitat conditions have impacted prey populations, including historical salmon runs and aggregations of waterfowl in and around Puget Sound and the Columbia River (Stinson et al. 2001).

3.2.4.4 Population Trends of the Species

To facilitate the recovery of the bald eagles in the lower 48 states, five recovery regions were established, beginning in 1982. All of Washington State lies within the Pacific Recovery Region. Federal delisting goals for this region include a minimum of 800 nesting pairs with an average reproductive rate of 1.0 fledged young per occupied breeding area, and an average success rate for occupied breeding areas of not less than 65% over a 5-year period. Attainment of breeding population goals should be met in at least 80% of the 37 management zones, and wintering populations should be stable or increasing (Federal Register July 6, 1999).

Since 1995, many of these goals have been reached. Productivity has averaged about 1.0 young per occupied breeding area since 1990, and the average success rate for occupied breeding areas has exceed 65% for the past 5 years (Federal Register July 6, 1999). However, although the number of occupied breeding areas continues to increase, only 28 of the 37 management zones have met breeding population goals (76%). Of the 28 zones where target levels have been met, at least 11 have more than doubled the established goal (Federal Register July 6, 1999).

The last statewide surveys conducted in 1988 at 841 known territories recorded 664 occupied sites. Between 1981 and 1998, the nesting population in Washington had increased 427%, or about 10% annually. However, although no comprehensive surveys have been completed since 1998, a recent decline in nest occupancy rate and the appearance of nests in developed areas suggests that nesting habitat in parts of western Washington may be approaching saturation. Similarly, between 1990 and 1998, there have been no trends in productivity or nest rate success, indicating that such variables have stabilized and that the nesting eagle population may be near carrying capacity (Stinson et al. 2001).

Despite these upward trends, increases in human populations will likely bring about habitat changes that will limit space available for foraging and nesting, and well as the abundance of required prey populations.

3.2.5 Canada Lynx

The Canada lynx is listed as threatened by the USFWS and by the WDFW. The species is found over most of Alaska and Canada, with Washington, Idaho, Montana, Utah, Colorado, and Wyoming marking the southern limits of their range in western North America (Koehler 1990). Within the state of Washington, they are typically found in the subalpine and boreal forests of north central and northeastern Washington, although their densities tend to be much lower than populations in Alaska and Canada.

Declines in lynx populations have been attributed to habitat reduction, historical overharvesting, increased competition from other carnivores, and expanded human activity in high elevation areas (WDFW 1993; Ruediger et al. 2000, 65 FR 16052-16086). Although significant natural population cycles of the lynx are well documented, available evidence indicates that populations in northeastern Washington have been depressed for at least the last 20 years, with no indication of population increases typical of lynx populations during more favorable years (WDFW 1993).

3.2.5.1 Biological Requirements

The distribution of lynx throughout its range and distribution of its primary prey, the snowshoe hare, is closely tied to the distribution of boreal forest. In north central Washington, these habitats consist primarily of Engelmann spruce, subalpine fir, lodgepole pine, and aspen forests. In northeastern Washington, lodgepole pine retains its importance within lynx home ranges, but western red cedar and western hemlock are also used. Lynx require two structurally different forest types: early successional forest types for foraging and late successional forests that contain cover for kittens and denning. Intermediate stages may be used as travel corridors that provide connectivity between foraging and denning and cover habitats (Koehler and Aubrey 1994, Aubry et al. 1999).

Habitats used for foraging by lynx correspond to habitats of their primary prey, the snowshoe hare. Snowshoe hare abundance at southern latitudes is greatest in early successional forests. In Washington, snowshoe hare abundance was found to be four to five times greater in young, regenerating stands of lodgepole pine (less than 20 years old) than in 43- to 80-year-old stands; and over nine times greater than in stands more than 100 years of age (Koehler 1990). Conifer cover is an important component of snowshoe hare habitat, particularly at southern latitudes, although stem density is probably more important than species of conifer (Koehler and Aubrey 1994). Lynx foraging habitat in Washington contained an average stem density of 6,413 stems per acre. Stem diameter also appears to be important to survival of snowshoe hares, and thus to lynx. Stem diameters of less than 0.4 in. are preferred forage for snowshoe hare (Wolff 1980), with use of larger stems indicating food stress (WDFW 1993).

In Washington, lynx use stands greater than 150 years of age with large woody debris (LWD) such as fallen trees or upturned stumps for denning. Dens are typically situated on northeast aspects in stands of Engelmann spruce, subalpine fir, and lodgepole pine. A high density of fallen logs greater than 1 foot in diameter appears to be required. Minimal human disturbance, proximity to travel corridors, nearby foraging habitat, and a stand size of at least 5 acres appear to be additional components of lynx denning habitat (WDFW 1993, Koehler and Aubrey 1994).

Lynx use travel cover to move within their home ranges, for connectivity between denning and foraging areas, and for dispersal across the landscape. Travel cover generally consists of closed canopy coniferous/deciduous vegetation that is greater than 6 feet high and adjacent to foraging habitat. Forested areas with light stocking densities (170 to 260 trees per acre) and openings more than 300 feet wide may be avoided by lynx. Home range sizes in Washington range from 14 to 27 square miles, with daily travel distances of up to 3.2 miles and long distance dispersal or exploratory movements up to 600 miles (McKelvey et al. 1999).

3.2.5.2 Designated Critical Habitat

There is no designated critical habitat for the lynx.

3.2.5.3 Factors of Decline

Scientific information about lynx populations in Washington State is relatively scarce, supported primarily by historic hunting and trapping records. These records provide little information aside from documenting the species' known presence in the state.

Lynx populations have historically been found in the northeast and north-central regions and along the east slope of the Cascades. Although lynx were somewhat more widespread and perhaps more common in the past, it is unlikely that they were ever abundant compared to populations in British Columbia and Canada because of the limited and fragmented nature of high elevation boreal habitat in Washington. Nonetheless, the lynx population in Washington has continued to decline because of overharvesting, habitat change, and fluctuations in snowshoe hare populations (Stinson 2001).

The boreal forest habitat of lynx is naturally restricted to high elevations and therefore fragmented by topography. The fragmented distribution of habitat limits population size and can restrict conservation efforts. The existence of lynx populations in Washington probably results from dispersal of higher density populations in Canada, which are affected by lynx harvest and habitat trends in southern British Columbia. Forest management practice may also affect lynx populations. Fire suppression practices limit the number of dense, young, regenerating lodgepole pine stands that support denning habitat and snowshoe hares populations. Clearcutting and heavy partial cutting allow for increased winter recreation access on constructed roads and may compact the snow enough to allow coyote and bobcat access to areas typically hunted exclusively by lynx. Finally, the condition of low elevation matrix habitats may affect the ability of lynx to survive while dispersing between mountain habitats, particularly when human barriers, such as transportation corridors, limit certain migration paths (Stinson 2001).

3.2.5.4 Population Trends of the Species

The population of lynx in Washington State is estimated at fewer than 200 animals, and the number may be fewer than 100 animals. The majority of this population is concentrated in the Okanogan Lynx Management Zone (LMZ), which covers over 2,000,000 acres and includes the Lake Chelan Sawtooth Wilderness area, Loomis State Forest, and parts of the Lake Chelan National Recreation Area and North Cascades National Park. GIS analysis of forest cover types determined that 67% of the Okanogan LMZ was suitable lynx habitat. Evidence from winter tracking indicated good reproduction in the northern two-thirds of the Okanogan LMZ, which has most likely contributed to higher quality habitat and continuity with British Columbia populations (Stinson 2001). Habitat potential outside of the Okanogan study area is generally lower since habitat is more fragmented and removed from larger populations in British Columbia (Stinson 2001). The presence of a lynx in the action area is highly unlikely.

3.2.6 Gray Wolf

The gray wolf is listed as endangered by the USFWS and by the WDFW. Gray wolves are found in all habitats of the northern hemisphere except tropical forest and arid deserts (Nowak and Paradiso 1983). In North America, gray wolves historically occurred throughout Canada and the United States, except in the southeastern quarter. Currently, naturally occurring viable populations of the gray wolf in the United States have been documented in Minnesota, Wisconsin, Michigan, and northwestern Montana. Gray wolves have also been reintroduced in Yellowstone National Park and in Idaho. In Washington, gray wolf family units have been documented in two areas in the last 10 years, including the North Cascades National Park. Sightings have occurred in the North Cascades and Selkirk Mountains. Gray wolf presence within the action area is extremely unlikely due to the small potential number of individuals.

Declines in gray wolf populations coincide with the westward expansion of European settlers in the late 19th and early 20th centuries. Declines are primarily attributed to human persecution. Severe reductions in ungulate prey populations and habitat loss also contributed to their decline (USFWS 1987).

3.2.6.1 Biological Requirements

Historically, gray wolves occupied a variety of habitat types, demonstrating a tolerance to a broad array of habitat conditions. Key components of suitable habitat for gray wolves include a year-round large ungulate and alternative prey base, space with minimal human encroachment and contact, and suitable denning and rendezvous sites (USFWS 1987).

Gray wolves typically dig their own dens, often weeks in advance of the birth of pups. Dens tend to be located on southerly aspects of moderately steep slopes on well-drained soils, usually within 400 yards of surface water in an area overlooking surrounding terrain. These sites also tend to be at least 1 mile from recreational trails and 1 to 2 miles from backcountry camp sites (USFWS 1987).

Rendezvous sites are specific resting and gathering sites used by wolf packs during the summer and fall after natal dens have been abandoned. The sites are typically composed of a meadow or complex of meadows and adjacent stands of timber located near water. Wolves are particularly sensitive to disturbance at the first few rendezvous sites used after abandonment of the natal den. Rendezvous sites are often located in bogs or abandoned and revegetated beaver ponds. The size of rendezvous sites varies, but they typically encompass approximately 1.0 acre.

3.2.6.2 Designated Critical Habitat

There is no designated critical habitat for the gray wolf in Washington State.

3.2.6.3 Factors of Decline

Large-scale predator eradication programs initiated in the early part of the 20th century pushed gray wolves in the lower 48 states to the brink of extinction. Wolves were trapped, shot from planes and snowmobiles, dug from their dens, and hunted with dogs (USFWS 1998). Animal carcasses were also poisoned to eradicate wolves from areas where there was a perceived threat to livestock. Wolf carcasses could be sold to the federal government for up to $50.00 as late as 1965 (USFWS 1998). By the mid-20th century, only two small populations remained in Minnesota and Michigan. Overhunting of prey populations important to gray wolf survival, including bison, deer, elk, and moose, also contributed to their decline.

Gray wolves continue to compete with humans for space, and wolf populations often fluctuate with food availability and pack competition (USFWS 1998).

3.2.6.4 Population Trends of the Species

A recovery plan for wolves in the northern U.S. Rocky Mountains was completed in 1980 and revised in 1987 (USFWS 1987). It sets recovery goals for thee recovery areas in the region: northwestern Montana, central Idaho, and the Yellowstone National Park area. If two of these recovery areas support a population of 10 breeding pairs for 3 years, wolves in the northern Rockies can be reclassified from endangered to threatened. When all three recovery areas maintain 10 breeding pairs for 3 years, wolves can be delisted. There are no goals for wolf populations in Washington State, although it is speculated that the proximity to wolf populations in British Columbia and Alberta may make Washington State's North Cascades and Selkirk Mountains some of the highest potential habitat available for natural wolf recolonization (Laufer and Jenkins 1989).

In the lower 48 states, gray wolves are established with increasing populations in two areas: western Montana and northern Idaho; and Minnesota, Wisconsin, and Michigan. Wolves began to successfully recolonize northwestern Montana in the early 1980s, and it is estimated that the area now supports a minimum of 63 wolves in five packs (USFWS 2001). In 1995 and 1996, 66 gray wolves from southwestern Canada were reintroduced to Yellowstone National Park and central Idaho. In the Central Idaho reintroduction area, there were at least 141 wolves in 1999, including 10 packs that produced pups, and in the summer of 1999, Yellowstone hosted approximately 118 wolves, including eight reproducing packs (USFWS 2001). At least 20 packs produced pups in 1999 for the third consecutive year.

Wolves have been sighted throughout the Cascade Range and Selkirk Mountains in Washington's northeast corner (North Cascades National Park Service 1998a). In 1990, adults and pups were seen in the Hozomeen area and since then, biologists have seen three separate groups of adult wolves with pups in the Cascades (North Cascades National Park Service 1998a). On February 6, 2002 the alpha female of the Gravelly Pack, who was relocated to Montana in December of 2001, was sighted feeding on a moose carcass 10 miles west of Priest Lake inside the Washington State border (Bernton 2002). In addition to natural migration into the North Cascades range, in 1998, Congress authorized a study and public outreach effort to determine the feasibility of wolf restoration in Olympic National Park. These efforts are being coordinated by an interdisciplinary group of managers from several federal and state agencies, as well as area tribes and the Olympic Natural Resource Center (North Cascades National Park Service 1998b).

3.2.7 Grizzly Bear

The grizzly bear is listed as threatened by the USFWS and endangered by the WDFW. Historically, the grizzly bear occurred from the mid-plains west to the coast of California and south into Texas and Mexico. Currently, grizzly bears remain in only five areas in the lower 48 states of the United States: the Greater Yellowstone Ecosystem, the Northern Continental Divide, the Cabinet-Yaak area, the Selkirk Mountains, and the Northern Cascade Mountains. Two additional areas, the San Juan Mountains in Colorado, and the Selway-Bitteroot Mountains in Idaho, may also support grizzly bear populations. Grizzly bear occurrence in the action area is unlikely due to the small potential numbers of bears and human encroachment pushing individual bears into more remote areas. Human-caused mortality and habitat loss and degradation are currently the greatest threats to grizzly bear populations in the lower 48 states (USFWS 1993).

3.2.7.1 Biological Requirements

Grizzly bears historically occurred in a wide variety of habitat types, suggesting a broad range of tolerances. Their digestive system and teeth are adapted to allow grizzly bears to exploit a wide variety of food sources. Although typically carnivores, they can be successful omnivores. When conditions demand it, grizzly bears can survive an almost exclusively herbaceous diet (USFWS 1993).

Upon emergence from the den, grizzlies generally seek lower elevations and drainage bottoms where there is abundant new plant growth and ungulate (hoofed animal) winter range. Through spring and early summer, the bears follow plant growth back up to higher elevations, transitioning back to fruit and nut sources in the later summer and fall (USFWS 1993).

The spatial and temporal distribution of food has a pronounced influence on grizzly bear movements. Other factors, including human encroachment, weather conditions, and interactions with other bears, can also affect the home range of individual bears. In one instance in the Cabinet-Yaak recovery zone, a male bear had a home range of over 1,100 square miles between 1987 and 1992 (USFWS 1993). The large home range of grizzly bears, particularly males, also contributes to the genetic diversity of the species by enabling males to mate with numerous females. As a result, an abundant and varied food supply and large tracts of land providing relative isolation and freedom from human encroachment are important components of grizzly bear habitat and reproduction.

Although not known to be territorial, adult grizzly bears are normally solitary wanderers. Each bear appears to have a minimum distance within which another bear or person cannot enter (Herrero 1970, Mundy and Flook 1973). Mating season is the only time when adult males and females are seen together, and this cohabitation is typically short lived and only during the estrous period (USFWS 1993).

Mating appears to occur between May and July. Both males and females may take several mates, particularly in areas of high density (Craighead et al. 1969). Grizzly bears do not mate until they are between 3.5 and 8.5 years old, and typically produce a litter of one to four cubs (Herrero 1978, Russell et al. 1978).

Cover is another important component of grizzly bear habitat. Grizzly bears use forest cover for bedding, and may use densely forested areas to avoid human contact (USFWS 1993). Open parks also provide important habitat for foraging and are typically within 1 mile of a forested area utilized by an individual bear.

The unavailability of food, deep snow, and cold temperatures force bears to hibernate during the winter. Dens are excavated between September and November and are typically dug on steep slopes where wind and topography cause an accumulation of deep snow. Den sites usually occur at higher elevations well away from development and human activity (USFWS 1993).

3.2.7.2 Designated Critical Habitat

The USFWS has not designated critical habitat for the grizzly bear.

3.2.7.3 Factors of Decline

The 1975 federal listing of grizzly bears stated that human encroachment into grizzly bear habitat has directly contributed to the decline of the species. Access road and trial construction into formerly inaccessible areas has made bears more susceptible to legal hunters, illegal poachers, human-bear conflicts, and livestock-bear conflicts. In addition, research has shown that grizzly bear populations survive where frequency of contact with humans is relatively low (Mace et. al 1996). Typical bear responses to encounters with roads and trails include spatial avoidance, decreased survival, and altered temporal patterns.

The North Cascades Grizzly Bear Recovery Zone (NCRZ) encompasses 9,565 square miles within north-central Washington, including North Cascades National Park and most of the Mount Baker-Snoqualmie, Wenatchee, and Okanogan national forests. Historical records suggest that grizzly bears once occurred throughout the NCRZ, although the region currently supports, at a minimum, 10 to 20 individuals (Johnson and Cassidy 1997). The decline of the grizzly bear population within the North Cascades area is likely a result of intensive killing for the fur trade, followed by rapid human encroachment into their habitat (Sullivan 1983, Almack et al. 1993).

3.2.7.4 Population Trends of the Species

Between 1986 and 1992, the Interagency Grizzly Bear Committee (IGBC) completed an evaluation in the North Cascades to determine if recovery of grizzly bears in the region was feasible and warranted (Almack et al. 1993, Gaines et al. 1994). This evaluation showed that a small number of grizzly bears still resided in the North Cascades and that habitat of sufficient quality and quantity was available to support a population of 200 to 400 bears (Almack et al. 1993). As a result, the North Cascades Grizzly Bear Management Subcommittee amended the Grizzly Bear Recovery Plan (USFWS 1993) and developed an access management plan to balance to the habitat needs of grizzly bears with anticipated human access

3.2.8 Ute Ladies'-Tresses *(Spiranthes divulialis)*

In 1992, Ute ladies'-tresses was designated as threatened (57 CFR 2048). This perennial orchid usually has one stem, 20 to 50 cm tall, which rises from tuberously thickened roots. It has narrow leaves that are longest at the base and persist during flowering. The species is characterized by white, stout, ringent (gaping mouth) flowers clustered in a spike of three white spirals at the top of the stem (U.S. Federal Register, 17 January 1992).

Habitat loss and degradation are the primary reasons for the decline of the species.

3.2.8.1 Biological Requirements

Ute ladies'-tresses is an orchid found in wet meadows fed by groundwater discharge, along wetlands, seeps, and alkaline flats, and in open intermontane valley bottoms ranging in elevation from 1,500 to 7,000 feet. The only known occurrence of Ute ladies'-tresses in Washington is in a periodically flooded alkaline flat (moist meadow) adjacent to ponderosa pine/Douglas-fir woodlands and sagebrush steppe. The plant is an early seral species, establishing on newly flooded or disturbed areas. It flowers in late August and may persist underground for several years before emerging above ground (WNHP and BLM 1999). Because of its similarity to other orchid species of the same genus, it cannot be definitively identified except when in bloom. Its ability to remain dormant for several seasons or produce only vegetative shoots in a season makes it even more difficult to identify, count and monitor (Calypso Consulting 2000).

Orchids generally require symbiotic associations with mycorrhizal fungi for seed germination. Observations indicate that bumblebees are the most important pollinators for this species (WNHP and BLM 1999).

3.2.8.2 Designated Critical Habitat

Critical habitat has not been designated for Ute ladies'-tresses in Washington State.

3.2.8.3 Factors of Decline

Urban development, stream channelization, water diversions, and other watershed and stream alterations in riparian and wetland habitats have severely degraded the habitat available for Ute ladies-tresses. Changes that alter vegetation or hydrology are the most damaging. Ute ladies'-tresses cannot compete with nonnative invasive species, such as reed canarygrass, and are shaded out by trees and shrubs (Calypso Consulting 2000). Replacement habitats that discourage pollinators or pollen-producing plants limit the species' ability to reestablish in an area.

3.2.8.4 Population Trends of the Species

Ute ladies'-tresses was first typed as a unique species in 1984, separating it from other Spiranthes with which it was formerly confused (U.S. Federal Register, 17 January 1992). At the time of listing, populations were only known to occur in certain riparian areas in Colorado, Utah, and Nevada. Since that time, populations have been located in Wyoming, Nebraska, Montana, Idaho, and Washington. The plant was first discovered in Washington in 1997 at a lake in Okanogan County, and three additional populations were subsequently found along the Columbia River near Rocky Reach Reservoir (Watershed Company 2001).

Section 4. Environmental Baseline

The environmental baseline represents the current base set of conditions to which the effects of the proposed action would be added. The environmental baseline (50 CFR Part 402.02) consists of

- the past and present effects of all federal, state, or private actions and other human activities in the action area;
- the anticipated impact of all proposed federal projects in the action area that have already undergone formal or early Section 7 consultation; and
- the impact of state or private actions that are contemporaneous with the consultation in process.

4.1 Description of the Action Area

The action area includes all areas that could potentially be affected by the covered activities, considering implementation of the required conservation measures described below (Figure 1). The impact area within the action area will vary based on each species under consideration. The RGP is intended to cover the specified activities in the Columbia River between Rock Island and Chief Joseph Dams and in the Okanogan River from River Mile 5 to its mouth at the Columbia River within Chelan, Douglas, and Okanogan Counties in the State of Washington.

For terrestrial wildlife species, the limits of the impact area for individual projects would include all areas within 1 mile of the work area. Beyond 1 mile, noise, dust, air quality, and habitat impacts would not affect listed wildlife species.

For plants, the action area for individual projects would be limited to approximately 100 yards of the limits of the work area. Beyond 100 yards, impacts from project activities would not affect listed plant species.

For fish and aquatic wildlife species, the action area for individual projects would be no more than 1 mile downstream and no more than 0.5 miles upstream of the project area boundary. Beyond these limits, project impacts on water quality (turbidity, contaminants), noise, flooding characteristics, and habitat would be insignificant and undetectable and would not affect listed fish and aquatic wildlife species. Relative to the volume of water flowing through the action area and background water quality conditions, projects authorized by the RGP would have negligible effects on water quality in the action area. However, local effects are possible.

4.2 Description of the Environmental Baseline

4.2.1 Mainstem Conditions

The action area consists of three major impoundments of the Columbia River behind Rock Island and Rocky Reach and Wells Dams, while also including a portion of the Okanogan River up to River Mile 5.

The Rock Island Reservoir extends 20.5 miles upstream to the tailrace of Rocky Reach Dam. Rock Island Reservoir has a surface area of 3,470 acres, a volume of 126,000 acre-feet, an average depth of 33 feet, and a shoreline length of 42 miles. The Wenatchee River is the one major tributary flowing into Rock Island Reservoir between Rock Island and Rocky Reach Dams. The Rock Island Reservoir forms the downstream boundary of WRIAs 40, 44, and 45.

The Rocky Reach Reservoir (Lake Entiat) extends 41 miles upstream to the tailrace of Wells Dam. Lake Entiat has a surface area of 8,167 acres, a volume of 431,500 acre-feet, an average depth of 42 feet, and a shoreline length of 93 miles. The Entiat and Chelan Rivers are the major tributaries flowing into the Reservoir. Lake Entiat forms the downstream boundary of WRIAs 44, 45, 46, 47, and 50.

The Wells Reservoir (Lake Pateros) extends 30 miles upstream to the tailrace of Chief Joseph Dam. Lake Pateros has a surface area of 9,740 acres, a volume of 331,200 acre-feet, an average depth of 34 feet, and a shoreline length of 100 miles. The Methow and Okanogan Rivers are the major tributaries flowing into the reservoir. Lake Pateros forms the downstream boundary of WRIAs 48, 49, and 50. Fish passage is available up to Chief Joseph Dam. Anadromous fish passage is blocked but was historically accessible upstream of Chief Joseph Dam.

Chelan County Public Utility District (PUD) operates Rock Island and Rocky Reach Hydroelectric Projects. The Douglas County PUD operates Wells Dam. At the Rock Island Dam, the maximum pool elevation is 613 feet above sea level while the tailwater elevation is 577 feet above sea level. At the Rocky Reach Dam, the normal headwater elevation is 707 feet above sea level. The normal tailwater elevation is 619 feet above sea level.

All of these dams are run-of-river dams and, hence, have little to no storage capacity. The primary control on flows and water levels for the mainstem Upper Columbia River is the Grand Coulee Dam, a flood control and storage facility upstream of the project area. The Grand Coulee Dam releases water, or drafts, from August through December according to "rule curves" determined on an annual basis. From January through mid-April, project draft for flood control and energy production is variable based on runoff volume forecasts. From mid-April through June, Lake Roosevelt is refilled with spring runoff. In addition, during this time, water is released to aid downstream migration of juvenile anadromous salmonids. This control results in a relatively flat hydrograph with minimal fluctuation in water level throughout Lake Entiat.

Smoothing of the hydrograph and lack of significant flow velocities because of Columbia basin hydroelectric development has increased the amount of fine sediment present in mainstem cobble substrate, especially in the lower portions of reservoirs (Falter et al. 1991). However, mainstem anadromous salmonid spawning is concentrated in dam tailrace areas, where conditions are most like a free-flowing river. River hydraulics in these areas are sufficient to maintain well-sorted substrates, relatively free of fine sediment, and velocities that meet spawning preferences of juvenile salmonids.

Columbia River mainstem tributaries have the potential to deposit bedload material into reservoirs, forming alluvial fans at the confluences. If the accumulation of fine sediment is not excessive, then bedload material could provide a good source of spawning substrate, as long as local water velocities are appropriate for spawning and they are sufficient to keep excessive levels of fine sediment from accumulating throughout the incubation stage. Fine sediment loading in the Okanogan basin is considered high, while the Methow and Wenatchee River systems transport a moderate level of fine sediment (Rensel 1993).

Water quality in the Mid-Columbia River reach is influenced by the operation of Grand Coulee Dam; the Mid-Columbia PUD projects have limited capability for flow regulation. Dissolved oxygen is adequate in all reaches, with exception of some extreme backwaters where aquatic weed growth restricts water flow. Turbidity is generally very low in the reservoirs (Rensel 1993). However, spilling water at the dams increases the total dissolved gas levels that can cause gas bubble disease in fish and other aquatic organisms.

The area surrounding the Wells Dam is mostly privately owned land that is used for orchards, rangeland, and residences. Douglas County PUD owns most of the shoreline lands surrounding the Wells Reservoir. Five miles to the northwest are the forest lands of the Okanogan National Forest. Recreation is a principal use near the dams and reservoirs.

A broad river valley surrounds the Rocky Reach Dam and there are several land uses located adjacent to the dam. These mainly include apple orchards that line both sides of the Columbia River. However, there are also private residences, a residential subdivision, some commercial uses, and Lincoln Rock State Park. Similar to Wells Dam, Rocky Reach was required to develop parks and recreation areas. State and federally owned lands are also located in the vicinity of Rocky Reach. Most of the land located east of the dam is privately owned, except for some interspersed federal public lands that are managed by the Bureau of Land Management (BLM).

Land ownership and uses in the vicinity of Rock Island Dam include private, state, and federal lands used for recreation, conservation, range land, and private residences. State and federally owned lands are located generally east, west, and south of the dam. Located east and west of the dam are public lands administered by the BLM. These federal lands are mostly located along Rock Island Creek and Douglas Creek east of the dam and on Wenatchee Heights west of the dam, and are interspersed among privately owned land. Located a few miles north of the dam is the ALCOA aluminum plant. Predominantly, there are no adjacent land uses because of the steep bluffs located next to the Rock Island Reservoir.

4.2.2 Okanogan River

The Okanogan River originates in British Columbia and flows south through a series of six large lakes before reaching the U.S. border where it enters Washington State. The basin covers approximately 8,200 square miles, with 2,500 square miles in the United States. The river joins the Columbia River at River Mile 533.5, between Chief Joseph and Wells Dams, near the town of Brewster, Washington. The Okanogan River is the northernmost geologic dividing line between the Cascade and Rocky Mountain ranges. Within Washington State, the watershed is about 65 miles long, averages about 35 miles wide, and covers about 1.65 million acres. The Similkameen River, located primarily in Canada, contributes 75% of the flow to the Okanogan River.

The average annual flow for the Okanogan River, measured at Ellisforde, is 3200 cubic feet per second (cfs). About 75% of the flow comes from the Similkameen River, located primarily in Canada. The gradient on the U.S. portion of the mainstem Okanogan averages about 0.04%. The first 17 miles of the river are within the backwater of Wells Dam (NMFS 2000). Stream flow in the U.S. portion of the Okanogan River is controlled by a series of 13 dams in British Columbia, and the Zosel Dam on Osoyoos Lake in Washington. Water releases to meet fishery needs are negotiated yearly by a consortium of fisheries and irrigation managers from both Canada and the U.S.

The basin is home to over two dozen species of plants and animals that are currently listed in the U.S. and Canada as nationally threatened, endangered, or vulnerable. A full one-third of all Red-Listed species in British Columbia reside in the Okanogan, and NMFS has concluded that the upper Columbia, where spring chinook and steelhead are listed as endangered, is the first priority for recovery planning efforts in the Columbia Basin. Additionally, the Okanogan supports one of only two viable populations of sockeye salmon left in the entire Columbia Basin.

The Okanogan River valley is broad and flat, with a river floodplain averaging approximately 1 mile in width. The elevation of the valley floor ranges from 920 feet at the international boundary to about 780 feet at Lake Pateros. Natural terraces, created mostly of glacially deposited gravel and sands, rise as much as 500 feet above the floodplain to the foot of, and between, the lateral ridges (Ecology 1975). Given the topography and geology, the river probably once meandered across the valley, and riparian habitat formed an extensive mosaic of diverse species. It was dominated by some combination of grass-forbs, shrub thickets, and mature forests with tall, deciduous trees. Common shrubs included willows, red-osier dogwood, hackberry, mountain alder, Wood's rose, snowberry, and currant. Trees included cottonwood, aspen, and water birch (Oregon-Washington Partners in Flight 2000 as cited in NMFS 2000).

The hydrology of the Okanogan River watershed is characterized by high spring run-off and low flows occurring from late summer through winter. Peak flows coincide with spring rains and melting snow pack. Low flows coincide with minimal summer precipitation, compounded by the reduction of mountain snow pack. Irrigation diversions in the lower valley also contribute to summer low flows.

4.3 Discussion of Historical Trend of Environmental Baseline

Both the Columbia River and the Okanogan River historically supported anadromous salmonid populations. The construction of hydroelectric dams, along with increased shoreline development, water quality impacts resulting from past and current agricultural practices, and timber harvest, has impaired anadromous salmon runs within the action area and degraded shoreline habitats for terrestrial species.

Since European settlement, the Okanogan River has been channelized from the mouth to beyond the U.S. border. State and county highways parallel the river at close proximity for its entire length in the U.S., except for a reach from Riverside to Janis, Washington that is several miles upstream from the action area. This is the only largely undeveloped reach in the U.S. along the Okanogan River floodplain. Agriculture, primarily orchards, livestock feed, and wheat, dominates the valley bottom. There are also several population centers and municipalities along the river within the action area. Riparian vegetation such as cottonwood, spruce, alder and a dense shrub layer are virtually nonexistent. Agriculture, residences, and associated roads contribute chemical contaminants and sediments to the streams and rivers.

The hydrologic function of the watershed has changed over the last century in response to human activity. Channelization of the Okanogan River has resulted in the river no longer being connected to its floodplain. Forest and range management practices have altered forest species composition, age class mix, and soil conditions. Formerly, Douglas fir was confined to wet areas or areas where topography limited fire intensity. Frequent low-intensity fires favored survival of mature pine and larch while increasing mortality rates for seedlings, younger trees, and Douglas fir. This condition maximizes interception loss and minimizes the snow pack on the ground (OWSAC 1999).

The three project area counties are largely rural with relatively low population. In 1997 the population of Washington State was 5,606,800, while the populations of Chelan, Douglas, and Okanogan Counties were 62,200, 30,800, and 38,400, respectively. Together, the three counties contain just 2.3% of the state population while covering 10,010 square miles, or 15% of the state. Since 1990, Washington State population increased 15.2%. Similarly, the study area counties have grown at the same or a faster rate. During this period, Chelan County grew by 9,950 persons (19%), Douglas County by 4,595 (17.5%), and Okanogan County by 5,050 (15.1%) (Washington Department of Employment Security 1998b as cited in NMFS 2000). Future population growth for the three area counties is generally expected to exceed the statewide rate of growth. Chelan County will reach 76,093 by 2010, a 46% increase from 1990. Douglas and Okanogan Counties will increase 51 and 32% over the same period to reach populations of 39,596 and 44,061, respectively (Washington Office of Financial Management 1995). Forty-five percent of the population in Chelan County resides in incorporated areas. Douglas and Okanogan Counties are more rural with 32 and 40%, respectively, of their population in incorporated areas.

Section 5. Effects of the Action

The following sections discuss anticipated effects from the activities proposed for authorization under this RGP. The ESA requires that federal agencies consider several types of effects, as defined below.

Direct effects are effects from actions that would immediately remove or destroy habitat, harm (injure or kill) species, or adversely modify designated critical habitat. Direct effects include actions that would potentially remove or destroy habitat, or displace or otherwise influence the species, either positively (beneficial effects) or negatively (adverse effects).

Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Indirect effects may include impacts to food resources, or foraging areas, and impacts from increased long-term human access.

Effects from interdependent and/or interrelated actions. These include effects from actions that (1) have no independent utility apart from the primary action, or (2) are part of a larger action and depend on the larger action for their justification, and/or (3) are required as part of the action, including maintenance and/or use of the project, as well as other actions that would be carried out to implement, maintain, and/or operate the project.

Conservation measures (or mitigation) are measures proposed to minimize or compensate for project effects on the species under review. Unless stated otherwise, the effects determinations, as defined below, are based on the assumption that conservation measures would be incorporated into the project.

The effects determinations are the specific conclusions of the biological assessment concerning the overall effect of the project on each species and/or critical habitat type. Possible categories for listed species and designated critical habitat are (1) no effect; (2) may affect, not likely to adversely affect; or (3) may affect, likely to adversely affect.

5.1 Authorized Activities and Their Effects

This RGP proposes to expedite the authorization of recurring activities that are similar in nature and have minor individual and cumulative adverse impact on the aquatic environment. Table 5-1 lists each of the activities to be authorized through this RGP, their associated construction and operation components, and their direct and indirect effects. In the following sections, each of the listed direct and indirect effects is discussed in greater detail. Please refer to Section 2.2 for detailed descriptions of each of the listed activities.

Table 5-1. Regional General Permit Authorized Activities and Their Direct and Indirect Effects

Actions	Effects
Construction:	
· General Construction Activities	· Reduced Water Quality (i.e., turbidity, contaminants)
· Operation of Heavy Equipment	· Noise and Reduced Water Quality (i.e., turbidity, contaminants)
· Barge/Tug Usage	· Noise and Reduced Water Quality (i.e., turbidity, contaminants)
· Pile Driving	· Noise and Reduced Water Quality (i.e., turbidity)
· Float Anchoring	· Habitat Loss
· Shoreline Modification	· Habitat Loss
Operation:	
· Treated Materials	· Reduced Water Quality (i.e., contaminants)
· Artificial In-Water Structures	· Habitat Degradation, Increased Predator Habitat, and Altered Water Flow
· Overwater Structure	· Reduced Littoral Productivity, Increased Predator Habitat, and Habitat Degradation
· Boat Mooring and Usage	· Increased Use, Reduced Littoral Productivity, Increased Predator Habitat, Altered Water Flow, Noise, and Reduced Water Quality (i.e., turbidity, contaminants)

5.2 Direct Effects

The primary direct effects of the authorized activities within this RGP include

- temporary impacts to water quality from increases in turbidity and potential minor fuel and oil spills,
- noise generated from pile driving and operation of construction equipment, and
- reduced shoreline and aquatic habitat .

The following sections describe these direct effects in detail.

5.2.1 Reduced Water Quality

During construction, proposed activities may affect water quality through the production of suspended sediment and the potential spill of hazardous materials.

Temporary local increased sedimentation may occur as sediments are mobilized during the installation of pilings and anchors, and from associated propwash from the tug, barge, or motorcraft used during construction. The duration and intensity of turbidity is dependent upon the quantity of materials in suspension, the particle size of suspended sediments, the amount and velocity of affected area, and the physical and chemical properties of the suspended sediments (NMFS 2001b). Turbidity within the immediate vicinity of the construction activity (several meters) would likely exceed the background levels by a significant margin and potentially affect fish and their prey by plugging gills, temporarily depleting the affected area of dissolved oxygen[1], and by burying bottom-dwelling benthic communities (USACE 2002, Martin et al. 1977, Carrasquero 2001).

Although turbidity may cause stress to salmonid species, studies by Redding et al. (1987) found that relatively high, suspended sediment loads (2,000 to 2,500 mg/l) did not appear to severely stress yearling salmon. While it is difficult to determine exactly how much of an increase in turbidity will result from these projects, suspended sediments are expected to be short-term and will not result in chronic sediment delivery to adjacent waters. Short-term, localized turbid areas associated with project construction are not expected to result in mortality or to have any significant physiological effects on listed species or their prey.

Machinery required for the construction will operate near the water, either from the shoreline or from floating barges. No machinery will operate directly within waters other than to place or remove materials via an extension of an excavator arm, boom crane, or other similar device. Although no machinery will operate directly within waters, there is a risk that petroleum products will leak or spill into the water. The risk to fish health would depend on the type of contaminant spilled, time of the year, spill amount, and success of containment efforts (USACE 2002). The use of concrete (wet or dry) in ambient water or the accidental spill of concrete would result in a short-term, localized increase in pH levels. Although potentially detrimental to aquatic organisms, it is expected that impacts would be negligible because the projects authorized by this RGP would be small in scale and would be required to meet water quality standards. Hazardous material containment materials such as spill absorbent pads, and trained personnel will be required onsite during any phase of construction where machinery is in operation near surface waters. The level of impact to the aquatic environment is expected to be minor because of the small amounts of petroleum products likely to be spilled during typical construction activities and because of required spill containment measures.

Although project activities may result in short-term and localized effects to water quality, effects to listed species will be minor. Projects authorized by this RGP will be small in scale. No direct dredging on lake or streambeds that could increase the release of sediments would be permitted. All work would have timing restrictions to minimize contact with and effects on listed species. In addition, creosote and pentachlorophenol shall not be used to treat piling and lumber from which a permitted facility is to be constructed. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.2.2 Noise

Increased noise is expected during pile driving and operation of machinery in the construction phase. The noise from pile driving would cause temporary, intense underwater and airborne sound events, and noise created by construction equipment will increase noise levels above ambient conditions. The use of a compression-hammer pile driver generates a typical peak underwater sound around 105 decibels (dB) that could be heard by salmonids up to 2,000 feet away from the point-source noise (USACE 2002). This noise could cause fish to avoid the work

[1] Turbidity reduces light penetration, thereby reducing photosynthesis, which reduces dissolved oxygen levels. In addition, suspended particles undergo oxidation (chemical and biological) which consumes dissolved oxygen.

area while pile driving is occurring, thus affecting foraging and migration patterns within a 2,000-foot radius of the sound source. Evasive response by salmonids from noise effects could also result in juvenile salmonids abandoning refuge areas and increasing risks of predation. Intense noise may also adversely affect fish eggs and embryos; however, possible effects have not been quantitatively studied (Carrasquero 2001).

While the distance that loud noise travels within water can be measured and quantified, scientific literature quantifying the effects to salmonids is at times conflicting. In a study examining the effects of impact pile driving on salmonid behavior in the Columbia River, the threshold distance for an avoidance response by salmonids was determined to be 10 feet from the impact source (Carrasquero 2001). Recognizing these discrepancies in the literature, the recommended WDFW salmonid protection area for pile driving effects is 300 feet (Carrasquero 2001).

Airborne noise generated during pile driving could be above ambient background noise levels and therefore affect listed wildlife species up to 1 mile away from the project location. Loud noises can displace bald eagles from foraging areas and flush adults from nests, causing abandonment or reduced reproductive success (Rodrick and Milner 1991). However, impact to foraging patterns for bald eagles and other wildlife species is expected to be minimal because of the brief duration of pile driving activity necessary for the small scale projects authorized by this RGP.

Noise impacts to Canada lynx, grizzly bear, and gray wolf during the rearing season would not likely occur, as these terrestrial animals do not rear young on or within 1 mile of the shoreline of the action area. However, bald eagles nest along or within a short distance of shorelines. As bald eagles are generally intolerant of human activities during the nesting season, loud noises such as pile driving and the operation of heavy machinery are restricted to work windows appropriate for the kinds of equipment and the distance from the nest (USFWS 1986).

Mechanized equipment would generate noise levels of approximately 60 to 110 dB. The shorelines of the action area are lightly to moderately developed with farm lands and some residential houses. This development and attractive recreational location produces daily boat and jet ski use during the summer months and reduced on-water use in the winter months. Summer ambient noise levels in the action area are likely similar to those produced by a quiet residential area and a motor boat (40db to 110db). Thus, the noise generated by the operation of heavy equipment during project construction would not greatly exceed ambient levels.

For the listed activities proposed for authorization by this RGP, noise generated by pile driving and the operation of heavy equipment is expected to have a minor impact on listed fish and terrestrial species. The duration of pile driving sound and the probability of impact to listed species would be minimized by implementing timing restrictions designed to avoid or minimize contact with listed fishes and terrestrial species during critical spawning or nesting periods. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.2.3 Habitat Loss

The construction of small piers includes elements that may require the removal of shoreline vegetation and loss of aquatic habitat. The indirect effects of a reduction of shoreline vegetation to terrestrial and aquatic habitats are described within the next section.

5.2.3.1 Reduced Shoreline Vegetation

Piers and other shoreline modifications often preclude riparian vegetation. The reduction in shoreline woody vegetation has likely reduced LWD recruitment potential, which, in-turn, reduces habitat components for salmonids. LWD is an important in-water component contributing to the production of invertebrate prey for salmonids. LWD also traps sediments, stabilizes banks, and protects shorelines from wave scour. Bald eagles use perch trees adjacent to the action area for nesting, roosting, and perching during winter foraging (Rodrick and Milner 1991). Removal of mature trees would also impact bald eagle feeding and breeding patterns.

The removal of riparian vegetation could also impact Ute ladies'-tresses. As described in Section 3.2.8,this orchid occurs in wet meadows fed by groundwater discharge, along wetlands and in seeps, and in riparian areas (MNHP 2001). Known populations of Ute ladies'-tresses occur within the action area. In addition, undisturbed riparian habitats adjacent to the action area could provide suitable habitat for this orchid.

To reduce long-term impacts to riparian habitats and to improve currently degraded shoreline habitats, riparian vegetation impacted during construction activities will be replaced with native, locally adapted species appropriate for the site whenever practicable. The removal of riparian vegetation would be limited to the minimum amount necessary to accomplish each project. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.2.3.2 Reduced Aquatic Habitat

Piers, ramps, floats, and pilings often include construction activities and operational activities that degrade or reduce aquatic habitat. Structures and materials placed into or on the bottom of a waterbody can reduce the quantity of aquatic habitat and introduces artificial elements into the aquatic environment, which can alter and reduce habitat complexity. In addition, aquatic LWD is typical removed during construction, which, in-turn, reduces habitat components for salmonids; LWD is an important in-water habitat component contributing to the production of invertebrate prey for salmonids and providing cover and refuge. LWD also traps sediments, and stabilizes and protects shorelines from wave scour. Degradation or reduction of aquatic habitat reduces the availability of suitable habitat for salmonids and their prey. Therefore, this could result in impacts to salmonids.

To reduce long-term impacts to aquatic habitats, in-water materials and structures would be limited to the minimum amount necessary to accomplish each project. In addition, riparian vegetation impacted during construction activities will be replaced with native, locally adapted species appropriate for the site whenever practicable in order to improve currently degraded aquatic habitats. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.3 Indirect Effects

The primary indirect effects of the authorized activities within this RGP include

- degradation of shoreline and aquatic habitat,
- creation of salmonid predator habitat,
- reduction in littoral productivity,
- increased boating activity, and
- alterations to water flow.

The following sections describe these indirect effects in detail.

5.3.1 Habitat Degradation

The construction of small piers includes elements that can affect both shoreline and aquatic environments. Riparian vegetation is often removed where docks attach to the shore. Riparian vegetation provides shading for water temperature moderation during summer months, and salmonid refuge. Plant roots provide bank stabilization, while riparian trees provide coarse woody debris input that increases in-water habitat complexity while providing organic matter that increases productivity in the aquatic food chain (Carrasquero 2001).

Shoreline modifications for support of in-water structures or for shoreline erosion control can reduce fish abundance and species richness. This reduction can be attributed to a decrease in habitat complexity that includes the reduction in overhanging vegetation, the removal of aquatic plants, the reduction of macroinvertebrate habitat due to the reduced multidimensional shoreline structure, and the decrease of in-water structures that provide salmonid refuge (Carrasquero 2001). All of these impacts to the shoreline could alter salmonid migration and feeding patterns, as well as increasing juvenile predation.

The removal of riparian vegetation decreases shading and has been linked to increased water temperatures. Low water temperatures are important to listed salmonids. The incremental reduction in over-water riparian shading could impact in-water temperatures and therefore reduce salmonid habitat.

In order to minimize the potential effects from the removal of riparian vegetation, all projects with activities linked to the shoreline would be required to implement shoreline planting to maintain or improve existing shoreline riparian conditions. With many of the shoreline areas of the action area experiencing reductions in riparian vegetation, the implementation of planting plans would generally improve current riparian conditions along the shoreline. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.3.2 Increased Predator Habitat

The construction of new docks, piers, and floats could increase smallmouth bass and northern pikeminnow (northern squawfish) habitat and the likelihood of juvenile salmonid predation. While no studies have quantified the effects of over-water structures on predator-prey interactions, the Corps, NMFS, and the USFWS consider any new overwater structure to potentially impact juvenile salmonid migration and increase habitat for juvenile salmonid predators (USACE 2002, Baird pers. comm.).

The fact has been well documented that smallmouth bass (a known predator of juvenile salmonids) have a strong affinity to over-water structures and use such habitat for spawning, rearing, and foraging (Carrasquero 2001). Also documented is the fact that the northern pikeminnow, another juvenile salmonid predator, "has the greatest potential for predation of juvenile salmonids" in eastern Washington because of their affinity for in-shore low-velocity habitat that can be created by in-water structures, including dock pilings installed in fast flowing sections of river (Carrasquero 2001, McLellan and O'Connor 2001).

Contrasting studies, however, found that in still waters (protected harbors) with steeply sloped shorelines, the northern pikeminnow preferred areas without floating platforms or docks. Thus the construction of overwater structures seems to benefit smallmouth bass in river reservoirs or lakes where current velocities are reduced, while benefiting northern pikeminnow in free-flowing river systems where in-water obstructions create low-velocity microhabitats (Carrasquero 2001).

Juvenile salmonids tend to utilize near-shore, shallow water, low-velocity habitats for rearing and feeding within free-flowing streams and within still-water reservoirs and lakes. The overlap of predator habitat created by over-water structures and juvenile salmonid use of the near-shore environment invite increased salmonid predation. Based upon this inference, it is likely that the increased salmonid predator refuge created by the additional structures permitted under this RGP would contribute to salmonid predation.

However, given their large size and aversion to high water temperatures typical of areas occupied by bass, bull trout would be unlikely to experience a change in predation rate as a result of the proposed projects. For example, bull trout typically avoid waters where the temperature exceeds 15°C and prefer temperatures less than 10°C whereas smallmouth bass consumption is minimal below 10°C. In addition, as top-of-the-line predators, adult and subadult bull trout would more likely impact bass than bass would be likely to impact project area bull trout.

Measures implemented to minimize the impact to salmonids from this increase in predator habitat include the avoidance of constructing new structures over vegetated shallow or spawning habitat for listed salmonids, restricting float size, elevating ramps and piers, maximizing the spacing between pilings, and leaving in-water and shoreline habitat features in place. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.3.3 Reduced Littoral Productivity

The construction of small piers and floats causes increased shading of in-water habitats. The reduction in light affects phytoplankton and aquatic macrophytes, and this condition can reduce littoral productivity and decrease the abundance of salmonid prey organisms. Consequently, increased shading can affect local plant and animal community structure and species diversity (Carrasquero 2001, NMFS 2001). Greatest levels of impacts to phytoplankton production occur with shading at water depths of 1 to 2 meters.

To minimize impacts to littoral productivity, deck size of new piers and floats would be restricted or passage of at least 60% ambient light through structures would be required. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.3.4 Increased Use

Installation of floats and piers can cause increased levels of boating activity in their immediate vicinity. Providing boat mooring would reduce the potential for damage to the substrate from repeated dragging of boat(s) onshore and offshore. Potential impacts from increased boating activity in shallow water include increased turbidity from propwash; uprooting of aquatic plants; pollution from exhaust, fuel spills, and oil leaks; noise disturbance; temporary salmonid displacement from the physical presence of the boat hull; and salmonid entrainment in the propeller (USACE 2002, NMFS 2001). Wave action from increased boating activity can also increase erosion of the shoreline and uproot emergent vegetation, thus degrading the shoreline habitat. The reduction of aquatic plants can reduce littoral productivity and decrease the abundance of salmonid prey organisms. Pollution from boats may cause short-term injury or death for fish, as well as impacting prey species and aquatic vegetation. Increased turbidity can injure or stress salmonids as described above. Noise could cause fish to avoid areas, thus affecting foraging and migration patterns. Evasive response by salmonids from noise effects could also result in juvenile salmonids abandoning refuge areas and increasing risks of predation. Similarly, loud noises can displace bald eagles from foraging areas and flush adults from nests, causing abandonment or reduced reproductive success (Rodrick and Milner 1991).

5.3.5 Altered Water Flow

In riverine systems, new piers and pilings create localized eddies on free-flowing systems such as the Okanogan. Areas of slow water may be used by salmonids and predatory fish to increase predation opportunities. Shoreline structures also act to intercept drift gravels and accelerate backshore erosion. This alteration of shoreline gravels can bury spawning areas and benthic organisms, cause the loss of shoreline riparian vegetation, and reduce shoreline habitat diversity and food supply (Carrasquero 2001). All of these factors act to degrade juvenile salmonid refuge and feeding habitat. Shoreline armoring will not occur in association with new pier installation. (Please refer to Section 7 of this BE for detailed conservation measures.)

5.4 Effects from Interdependent and Interrelated Actions

No interdependent or interrelated actions will be associated with the permitted activities within the RGP. All permitted activities will be single and complete actions. Therefore, no effects from interdependent or interrelated actions will occur.

5.5 Effects to the Environmental Baseline

With the incorporation of the conservation measures described below, degradation of the environmental baseline would be minimized. Historical alterations to the environmental baseline from the impoundment of waters and intensive agricultural and timber harvest have greatly altered and degraded aquatic and shoreline habitats. Implementation of the conservation measures would improve shoreline condition with the enhancement of riparian areas. The establishment of in-water and landward construction windows would serve to protect aquatic and terrestrial species during critical nesting, spawning, and foraging life stages.

5.6 Conservation Measures

The activities authorized by this RGP would incorporate conservation measures into their design criteria to greatly reduce impacts to shoreline and aquatic habitats to the extent that the environmental baseline habitat will not be reduced. The conservation measures will minimize the degradation of the existing environmental baseline through

- protecting and enhancing shoreline riparian habitat,
- minimizing the creation of salmonid predator habitat and shading of littoral habitat though float and dock design guidelines,
- promoting boat moorage and activity away from shallow littoral habitat,
- establishing in-water work windows for the protection of salmonids, and
- establishing construction restrictions near known species nesting, feeding, or spawning habitat.

These conservation measures become required conditions of each permit issued by the Corps under this RGP. Each of the above-mentioned conservation measures is described in detail in Section 7 of this BE.

5.7 Determination of Effects

5.7.1 Bull Trout

The proposed actions "may affect, but are not likely to adversely affect" bull trout. Bull trout populations within the action area are very small and predominantly restricted to tributaries to the action area that are outside of the RGP permit area. Within lake and pool habitats, the proposed actions may result in temporary increases in suspended sediment during construction and future use; however, turbidity is expected to be short-term. The required enhancement of shoreline riparian areas will improve existing degraded riparian conditions. New structures will be constructed in deeper water to minimize impacts to littoral habitats and designed to provide minimal shading and cover to predatory fish. In-water work windows will minimize the chance that juveniles are present during project construction.

5.7.2 Proposed Critical Habitat for Columbia River Bull Trout

The proposed actions "may affect, but are not likely to adversely affect" proposed critical habitat for bull trout. The determination would remain the same once the critical habitat designation is finalized. The proposed critical habitat includes the area covered in this RGP and this area primarily serves as migratory and rearing habitat for bull trout. The activities covered under this RPG would result in short-term disturbances to habitat during construction, however it is expected that conditions will generally be improved through the incorporation of riparian enhancement as part of approved projects. New structures will be constructed in deeper water to minimize impacts to littoral habitats and designed to result in minimal shading or other alterations to baseline conditions.

5.7.3 Chinook Salmon

The proposed actions have a determination of "may affect, likely to adversely affect" for chinook salmon. Chinook salmon populations utilize the action area primarily as a migratory corridor to upstream and tributary spawning areas, although some spawning occurs in dam tailrace areas and some beach spawning occurs. Within lake and pool habitats, the proposed actions may result in temporary increases in suspended sediment during construction and future use; however, turbidity is expected to be short-term. The required enhancement of shoreline riparian areas will improve existing degraded riparian conditions. New structures will be constructed in deeper water to minimize impacts to littoral habitats and designed to provide minimal shading and cover to predatory fish. In-water work windows will minimize the chance that juveniles are present during project construction.

5.7.4 Steelhead

The proposed actions have a determination of "may affect, likely to adversely affect" for steelhead. Steelhead populations utilize the action area primarily as a migratory corridor to upstream and tributary spawning areas, although some spawning occurs in dam tailrace areas and some beach spawning occurs. Within lake and pool habitats, the proposed actions may result in temporary increases in suspended sediment during construction and future use; however, turbidity is expected to be short-term. The required enhancement of shoreline riparian areas will improve existing degraded riparian conditions. New structures will be constructed in deeper water to minimize impacts to littoral habitats and designed to provide minimal shading and cover to predatory fish. In-water work windows will minimize the chance that juveniles are present during project construction.

5.7.5 Bald Eagle

The proposed actions "may affect, but are not likely to adversely affect" bald eagles. The project will result in increased noise during construction activities. Construction adjacent to nesting or foraging areas will be seasonally restricted through the appropriate work windows. Eagles are likely to occur in the action area; however, they are most likely adapted to the increased noise and boating activity in the lake environment. The critical period for bald eagle foraging is October 31 to March 31. With the timing restrictions for fish species, work will not occur during this critical time. The proposed actions will not affect bald eagle winter foraging in the area.

5.7.6 Canada Lynx

The proposed action would have "no effect" on Canada lynx. The action area is not within suitable habitat for the species, and actions would be restricted to the shoreline areas.

5.7.7 Gray Wolf

This proposed actions "may affect, but are not likely to adversely affect" gray wolves. The proposed action would occur exclusively along shoreline areas and would not impact upland wolf habitats adjacent to the action area. In the unlikely event that a wolf migrates through the action area during construction, noise from construction activities may cause wolves to avoid shoreline habitats.

5.7.8 Grizzly Bear

The proposed actions "may affect, but are not likely to adversely affect" grizzly bears. Although the proposed action area is adjacent to the North Cascades Grizzly Bear Recovery Zone, authorized actions would be restricted to the shoreline areas within the action area. The action area is in an area of moderate human activity, and grizzly bears are not likely to utilize portions of the action area. In the unlikely event that a grizzly bear migrates through the action area during construction, noise from construction activities may cause the bear to avoid shoreline habitats.

5.7.9 Ute Ladies'-Tresses

The proposed actions "may affect, but are not likely to adversely affect" Ute's ladies-tresses. No known populations of the orchid occur within the action area.

Section 6. Cumulative Effects

6.1 Scope

In the context of the ESA, cumulative effects encompass the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the covered area. Future federal actions, including those that are unrelated to the proposed action, are not considered in the cumulative effects analysis because they require separate consultation pursuant to Section 7 of the ESA.

This cumulative effects analysis addresses impacts in the context of general trends in population and land use within Washington State, with a focus on Chelan, Okanogan, and Douglas Counties, the counties in eastern Washington that include or are adjacent to the areas impacted by the proposed action.

6.2 Population

Washington's current population of about 5.8 million people has increased by about 1 million since 1990. The majority of the population growth has been concentrated in the west, with the large counties surrounding Puget Sound, as well as Clark County, accounting for 72% of the state's increase (OFM 1999).

Since 1990, Chelan, Okanogan, and Douglas counties have grown by 28%, 19%, and 24%, respectively (U.S. Census Bureau 2000). However, the annual growth in eastern Washington, which outpaced the west between 1992 and 1996, has leveled off and remained at less than 1% since 1998 (OFM 1999).

Population densities in the state are highest in the lowland areas surrounding Puget Sound, the Yakima River valley, Clark and Cowlitz County areas along the Columbia River, the Spokane area, the I-5 corridor in Lewis County, and the northern edge of the Olympic Peninsula. Statewide, the average population density is about 89 people per square mile, while densities in the counties surrounding the action area are much less, ranging from 7.5 people per square mile in Okanogan County to 17.9 people per square mile in Douglas County (U.S. Census Bureau 2000).

Forecasts for population growth predict an additional 1.2 to 2.5 million people will reside in Washington by 2020 (OFM 1999). In the shorter term, between 6 and 6.5 million are predicted to call Washington home by 2005. Future growth patterns should mirror historical patterns, with most growth in the Puget Sound area, along the I-5 corridor, and in selected valleys and highway corridors in eastern Washington.

6.3 Residential, Commercial, and Infrastructure Development

Intuitively, population growth results in increasing residential and commercial development. Improvements and upgrades to infrastructure (including highways, other transportation facilities, pipelines, power lines, and power plants) will likely track closely with increased residential and commercial development. Primary pathways of potential effects of land development include direct habitat loss, decreased water quality, contamination of waterways and uplands, changes to runoff patterns, habitat fragmentation, isolation of populations, and loss of habitat diversity. As development increases, the general quantity and quality of habitat suitable for threatened and endangered species will most likely decrease.

Statistics relevant to social characteristics taken during the 1990 census found that populations in Douglas and Okanogan Counties remain concentrated in rural areas, which may allow future infrastructure development to progress more slowly than in areas with large urban population centers (U.S. Census Bureau 2000). Nonetheless, any amount of build-out associated with population growth will likely lead to further habitat degradation. Actions taken to mitigate for the potential impacts of development, such as avoidance of habitat critical to species survival and strong urban/rural boundaries, may help slow the rate of habitat degradation.

6.4 Agriculture

In 1997, Washington had over 15 million acres of land dedicated to agricultural production (USDA 1997). Between 1992 and 1997, lands dedicated to farming decreased by 3%. This result probably reflects the industry's reliance on limited water supplies, particularly given the recent statewide drought, and on crop markets, in which the export market has decreased by 29% over the last 10 years (OFM 1999). The top five commodities sold in the state include fruits, nuts and berries; cattle and calves; dairy products; other crops, including potatoes and peanuts; and wheat (USDA 1997)

The action area is generally rural with a large agricultural base; however, there are several population centers and municipalities along the Columbia and Okanogan rivers within the action area. Between 1992 and 1997, farmland in Okanogan and Douglas Counties decreased by 9% and 1%, respectively. In Chelan County, farmland actually increased by 10%. Farmland in all three counties is primarily dedicated to fruit, nuts, and berries (USDA 1997).

Assuming future trends mirror the historical pattern, agricultural practices will continue to compete with lands dedicated to fish and wildlife habitat. Irrigation and pesticide practices will continue to affect water quality, as will cattle rearing and grazing on and near local watersheds. Any increase in lands dedicated to agricultural production may also require altering the natural function of habitats that have historically been used by listed species.

6.5 Fisheries

Fishing activities result in direct take of listed fish species and decreased forage base for other listed species of mammals and birds. Populations of salmon, likely the most studied and volatile fishery in the state, have steadily declined since the early 1970s, and fishery and water quality laws are constantly updated to protect their habitat. Other fish stocks, including bull trout and Dolly Varden, have also experienced substantial population declines. Both stocks are protected by stringent environmental and fisheries protection laws.

Recreational fishing within the action area is permitted for species other than steelhead, chinook salmon, and bull trout; any steelhead, chinook salmon, or bull trout caught must be released alive (WDFW 2002). The closed recreational fishery relieves some of the fishing pressure on listed species, although listed species are often caught unknowingly by fisherman and not returned as required. This failure could result in adverse impacts to threatened and endangered fish in local watersheds.

6.6 Forestry

Timber harvest in Washington has reached its lowest level since the 1970s (OFM 1999). The downward trend is commonly correlated to the environmental policies of the 1980s that resulted in the removal of sizable portions of federally owned forests available for product supply. The central region of the state, which includes Okanogan, Chelan, and Douglas Counties, experienced an 81% reduction in timber harvest on national forest lands between the periods from 1986 to 1990 and 1994 to 1998 (Power 2000).

Census data for 1991 showed an overall decrease in forestland (outside of national forestland) of almost 5 million acres since 1978. Eastern Washington itself lost 2.5 million acres (USDC 1993). However, the annual report produced by the Washington Department of Natural Resources (DNR) for 2001 indicated that there were no timber sales or timber harvests in eastern Washington during the period between June 2000 and July 2001 (DNR 2001). This report further illustrates the decreasing demand for timber in the state. If this trend reflects recurring conditions, timber harvest should have only minimal effects on listed species in the region. However, if harvesting in the region does continue in the future, clear cutting (which remains the technique of choice) may collectively lead to additional future degradation of habitat for listed species.

6.7 Pollutant Discharge

Air and water pollution can degrade habitat and have lethal and sub-lethal effects on fish and wildlife. Increased population typically causes increased air and water pollution. Developed areas also generate effluent, and runoff is often polluted with a variety of substances. In the early 1990s, Washington led the nation in the weight of pollutants discharged directly to surface waters (DNR 2000). As of 1999, nearly 60% of the lakes, steams, and estuaries studied failed to meet water quality standards (DNR 2000).

For the year 2000, the Columbia Basin Ecoregion, which includes the action area, showed an increasing trend of total nitrogen nutrients in evaluated freshwater waterbodies, and decreasing trends in dissolved oxygen, pH, total phosphorus nutrients, turbidity, and fecal coliform bacteria (Ecology 2001). Historic data collected at monitoring stations on the Columbia River at Bridgeport (in 1968), near Brewster (in 1968), and at Chelan Station (from 1991 to 1993), indicated that river water did not exceed water quality standards for temperature, oxygen, or pH (Ecology 2002). In addition, the Chelan Station indicated that the river water did not exceed water quality standards for fecal coliform (Ecology 2002).

Ongoing improvements to state monitoring programs will help to develop programs that can more effectively mitigate acute pollutant sinks and sources particular to targeted regions in the state. While future trends in pollutant discharge are difficult to estimate, discharges will probably continue in the future and are very likely to degrade habitat for listed species.

Section 7. Conservation Measures

This RGP will authorize the installation, replacement, repair or modification of one of the following combinations of residential overwater structures:

- pier;
- pier and ramp;
- pier and float(s);
- pier, ramp, and float(s);
- ramp;
- ramp and float(s); or
- float(s).

A repaired or modified structure may be different in kind from the existing structure. For example, an existing float may be modified to a pier, ramp, and float. This RGP will authorize the installation, replacement, repair or modification of one overwater structure per upland residential waterfront property owner or one joint-use overwater structure for two or more adjacent waterfront property owners. The conservation measures described in this section are required conditions of each permit issued by the Corps under the RGP.

Definitions of terms used in this section are as follows:

Overwater structures include piers, ramps, floats, and their associated structures. Associated structures include chain and anchors for floats, ladders, and swim steps.

Private-use overwater structures are constructed and utilized by a single residential waterfront property owner.

Joint-use overwater structures are constructed and utilized by more than one contiguous residential waterfront property owner or by a homeowners' association.

Freeboard height is the distance from the top of the float decking to the water surface.

The *opening size* of grating is the area enclosed between the rectangular bars and cross rods in bar grating, or the area enclosed between the bonds and strands in expanded grating. The *percent open area* is a relative measure of the degree light can pass through grating. The manufacturer often provides this value. Otherwise, it can be calculated by dividing the opening size by the sum of the opening size and the surface area of a single unit of rectangular bars and cross rods.

Skirting is vertical boards extending downward along the edge of an overwater structure.

The *Ordinary High Water* (OHW) mark for the Columbia River is at an elevation of 781 feet between Wells and Chief Joseph dams, 707 feet between Rocky Reach and Wells dams, and 613 feet between Rock Island and Rocky Reach dams (Corps of Engineers datum). For the Okanogan River, it is the visible line on the banks where the presence and action of waters are so common as to leave a mark upon the soil or vegetation.

The *footprint* of an overwater structure is the total surface area (square feet) of all the structure's components (e.g., pier, ramp and/or floats).

Heavy equipment includes but is not limited to bulldozers, back-end loaders, barges, jack hammers, and cement mixers.

A *Spill Prevention Control and Countermeasures Plan* (SPCC plan) is a comprehensive description of containment and countermeasures that would prevent an oil spill from occurring, as well as procedures to respond to and clean up an oil spill that does occur. The Clean Water Act requires preparation of an SPCC plan by any facility that stores, transports, or handles oil and could reasonably be expected to discharge oil in a harmful quantity to navigable water.

In the State of Washington, the Columbia River (entire length) and the Okanogan River (from McLaughlin Falls to mouth) are *navigable waters* of the United States.

7.1 Construction Timing

In order to protect Columbia River bull trout, upper Columbia River steelhead, upper Columbia River spring chinook, and the bald eagle, work shall comply with one of the following work windows. The main work window for fish species is July 1 through February 28. Variations in this work window are based on the distance of the proposed project to the nearest bald eagle nest and wintering concentration (see below). The Corps will coordinate with the U.S. Fish and Wildlife Service to determine the appropriate work window once an application is submitted. The following work windows have been established by the Corps (see Table 7-1 for summary of work windows).

1. Piles will be installed

    a. Pile installation will be done manually (e.g., with a sledge hammer) or with a vibratory pile driver

        i. Wintering bald eagle concentration is within ¼ mile of the project site

        - Bald eagle nest is within ½ mile of the project site: Aug 16 – Oct 30
        - No bald eagle nests within ½ mile of the project site: July 1 – Oct 30

        ii. No wintering bald eagle concentrations are within ¼ mile of the project site

        - Bald eagle nest is within ½ mile of the project site: Aug 16 – Dec 31
        - No bald eagle nests within ½ mile of the project site: July 1 – Feb 28

b. Pile installation will be done with an impact hammer (e.g., diesel, hydraulic)

i. Wintering bald eagle concentration is within 1 mile of the project site

- Bald eagle nest within 1 mile of project site: Aug 16 – Oct 30
- No bald eagle nest within 1 mile of the project site: July 1 – Oct 30

ii. No wintering bald eagle concentrations within 1 mile of the project site

- Bald eagle nest within 1 mile of the project site: Aug 16 – Dec 31
- No bald eagle nest within 1 mile of the project site: July 1 – Feb 28

2. No piles will be installed

a. Bald eagle wintering concentration within ¼ mile of the project site

i. Bald eagle nest within ¼ mile of the project site: Aug 16 – Oct 30

ii. No bald eagle nest within ¼ mile of the project site: July 1 – Oct 30

b. No bald eagle wintering concentration within ¼ mile of the project site

i. Bald eagle nest within ¼ mile of the project site: Aug 16 – Dec 31

ii. No bald eagle nest within ¼ mile of the project site: July 1 – Feb 28

Table 7-1. Summary of Critical Distances by Construction Method and Work Windows for Bald Eagle Nests and Wintering Areas, Bull Trout, Chinook Salmon, and Steelhead

Critical Distances for Construction					
Eagle Wintering Areas			**Eagle Nests**		
No Pilings	Manual Installation/ Vibratory Driver	Impact Hammer	No Pilings	Manual Installation/ Vibratory Driver	Impact Hammer
¼ mile	¼ mile	1 mile	¼ mile	½ mile	1 mile

Eagle Work Windows (Work Allowed)			
Wintering Areas Occur Within Critical Distance		**Wintering Areas Occur Outside of Critical Distance**	
Nests Occurs Within Critical Distance	Nests Occurs Outside of Critical Distance	Nests Occurs Within Critical Distance	Nests Occurs Outside of Critical Distance
August 16 - October 30	July 1 - October 30	August 16 - December 31	July 1 - February 28

Fish Work Windows (Work Allowed)		
Bull Trout, Columbia River DPS	**Chinook Salmon, Upper Columbia R. Spring Run ESU**	**Steelhead, Upper Columbia R. ESU**
July 1 - February 28		

7.2 Habitat Features

Existing habitat features (e.g., large and small woody debris, substrate material, etc.) shall not be removed from the riparian or aquatic environment. If invasive weeds (e.g., milfoil) are present, removal may occur by non-chemical means only with authorization from WDFW.

7.3 Mitigation

While the above-described construction measures will minimize impacts to the aquatic environment resulting from the individual structures, because of cumulative impacts of numerous structures to be authorized under this RGP, mitigation measures must be implemented. Overwater structures have the potential to degrade or destroy important habitat for threatened or endangered fish species. These mitigation measures will restore or create important fish habitat to offset the impact of the project.

The number of "Mitigation Units" required is dependent upon the scope of the proposed work and the existing environmental conditions.

One Mitigation Unit consists of one of the categories of activities in Table 7-2, which are ranked in order of preference by the Corps. If the first category cannot be met, the applicant must justify to the Corps why it cannot be met. Category 1 and 2 mitigation is important because the permanent removal of shoreline vegetation for bulkhead construction or unobstructed views may affect the forage base of ESA-listed salmonids by reducing litter and nutrient inputs to the aquatic environment. Category 3 mitigation is important because existing human structures can degrade the natural habitat by increasing shading, displacing the substrate, or leaching contaminants.

Table 7-2. Ranked Mitigation Categories

Category	Description
1	Planting overhanging vegetation along the shoreline immediately landward of OHW in a plot **20 feet long by 10 feet wide** OR
2	Removal of **10 linear feet** of hardened shoreline and planting overhanging vegetation in the removal area OR
3	Removal of **100 square feet** of existing in-water human-made structures (e.g., pier, piling, human-made debris, concrete, asphalt, etc.) or an equivalent of what is being constructed (e.g., proposed driving of 6 piles, removal of 6 derelict piles).

The following list identifies how many Mitigation Units are required for different situations. The units do not have to be in the same category. For example, if two mitigation units are required, the applicant can propose to remove 100 square feet of an existing pier and plant one plot of overhanging vegetation.

- One unit of mitigation is required for all new overwater structures authorized by this RGP.

- One unit of mitigation is required if the RGP is used to repair, replace, or modify an existing structure and the footprint of the proposed structure is larger than the footprint of the original structure.
- No mitigation is required if the RGP is used to repair, replace, or modify an existing structure and the footprint of the proposed structure is smaller than or equal to the footprint of the original structure.
- One unit of mitigation is required on any site where Corps-required mitigation has been removed.

7.3.1 Mitigation Planting

The purpose of mitigation planting is to establish a riparian plant community and associated food web that can be utilized by migrating salmonids as they pass through the project area. To this end, the prospective permittee is required to establish and preserve mitigation plantings at the project site for the duration that the overwater structure is in place.

The mitigation planting will include native shrubs (*Salix sitchensis, S. scouleriana, S. exigua, S. prolixa, S. lasiandra, Cornus stolonifera*) and trees (*Populus trichocarpa, Pseudotsuga menzeisii*). The shrubs will be planted at intervals of 3 feet on center, and the trees will be planted at intervals of 10 feet on center. At least two trees will be included in each unit of mitigation planting.

Prior to issuance of an RGP, the Corps must approve the prospective permittee's mitigation plan. The mitigation planting must be constructed within 12 months of the Corps' issuance of an RGP to the permittee.

7.3.2 Mitigation Planting Performance Standards

One hundred percent survival of all planted trees and shrubs is required during the first and second years after planting the mitigation units. During the third through fifth years after planting, 80% survival is required. The mitigation unit(s) must also be protected against predation (i.e., fencing). Individual plants that die must be replaced with native shrubs and trees taken from the species list above.

7.3.3 Mitigation Reports

Mitigation reports must be submitted to the Corps for all projects as follows.

- A status report on mitigation construction, including as-built drawings, must be submitted to the Corps 12 months from the date the Corps issues an RGP to the permittee. Status reports on mitigation construction will be due annually to the Corps until the Corps accepts the as-built drawings. The permittee can meet this reporting requirement by submitting to the Corps a completed *Status Report for Mitigation Construction* (Appendix A).

- For mitigation planting, monitoring reports will be due annually for 5 years from the date the Corps accepts the as-built drawings. The mitigation monitoring report will include written and photographic documentation on tree and shrub mortality and replanting efforts. The permittee can meet this reporting requirement by submitting to the Corps a completed *Mitigation Monitoring Report* (Appendix B).

7.3.4 Removal of Mitigation Planting

The loss of riparian vegetation, including the removal of mitigation units, can have negative impacts on salmonids by reducing structural and food elements that are critical components to the migratory corridor. Because of these potential negative impacts, an additional unit of mitigation is required on any site where the mitigation unit has been removed.

7.4 Shoreline Armoring

This RGP does not authorize construction of new shoreline armoring or repair of existing shoreline armoring. Such construction or repair must be approved by the Corps under a separate Department of the Army permit.

7.5 Disposal of Excess Material

All construction debris and any other material not authorized by the Corps for permanent placement into waters of the United States shall be disposed of in an upland location in a manner that precludes it from entering waters of the United States.

7.6 Heavy Equipment

If heavy equipment is used to accomplish the work, the equipment shall be clean and free of external oil, fuel, or other potential pollutants. All equipment shall be inspected daily prior to use to ensure the equipment has no fluid leaks. Should a leak develop during use, the leaking equipment shall be removed from the site immediately and not used again until it has been adequately repaired. No equipment may be stored or fueled so close to a surface water that the activity could adversely affect the waterbody.

7.7 Operation of Equipment

Heavy equipment shall be operated from on-shore staging areas, with the exception of an excavator arm or bucket. Pile drivers shall use constructed work platforms (e.g., a barge).

7.8 Spill Prevention, Control, and Containment (SPCC) Plan

If heavy equipment is used to accomplish the work, a SPCC plan must be implemented. A copy of the SPCC plan must be submitted to the Corps prior to construction.

7.9 Pilings

Pilings shall be limited by the following conditions:

- Pilings shall be white in color.
- Pilings shall be spaced at least 18 feet apart from one another on the same side of any component of the structure.
- Piling diameter shall not exceed 4 inches, or 5 inches if encased in polyvinylchloride (PVC) sleeve.

7.10 Floats

This RGP will authorize the installation, replacement, repair or modification of one overwater structure per upland residential waterfront property owner or one joint-use overwater structure for two or more adjacent waterfront property owners. The following conditions apply.

- Floats shall not exceed dimensions of 8 by 20 feet.
- Freeboard height on the float shall be at least 10 inches.
- Float materials contacting the water shall be white in color or translucent.
- Grating or clear translucent material (e.g., acrylic or high density polyethylene) must be installed on at least 60% of the surface area of the float; grating must have a 60% open area and clear translucent material must have greater than 90% light transmittance (as rated by the manufacturer).
- Skirting is prohibited on the float.
- On joint-use structures, up to two floats may be installed.
- The landward end of any permanent floats shall be located in water that has a depth of at least 25 feet below the plane of OHW (a depth finder or plumb bob may be used to determine depth).
- A temporary float may be installed in locations where water depth at the landward end of the float is less than 25 feet but at least 8 feet below the plane of OHW and must be installed in a location where the water depth fronting the property is greatest. Temporary floats shall be removed from the water annually before March 1 and shall not be installed until after June 30.

7.11 Piers and Ramps

This RGP will authorize the installation, replacement, repair or modification of one overwater structure per upland residential waterfront property owner or one joint-use overwater structure for two or more adjacent waterfront property owners. The following conditions apply.

- Piers and ramps shall be no more than 4 feet wide and shall be elevated at least 2 feet above the plane of OHW (a greater width is allowed to accommodate persons with disabilities).
- Piers shall extend a minimum of 20 feet waterward from the OHW line.
- Grating or clear translucent material shall cover the entire surface area of the pier and ramp; grating must have at least 60% open area and clear translucent material must have greater than 90% light transmittance (as rated by the manufacturer).
- Skirting is prohibited on piers and ramps.

7.12 Preservatives

Any paint, stain, or preservative applied to components of the overwater structure must be completely dried or cured prior to installation. Creosote and pentachlorophenol preserved wood are prohibited from use on overwater structures authorized by this permit.

Section 8. Essential Fish Habitat

8.1 Background

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for Essential Fish Habitat (EFH) descriptions in Federal fishery management plans and to require Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

The Magnuson-Stevens Act requires all fishery management councils to amend their fishery management plans to describe and identify EFH for each managed fishery. The Pacific Fishery Management Council (1999) has issued such an amendment in the form of Amendment 14 to the Pacific Coast Salmon Plan, and this amendment covers EFH for all fisheries under NOAA Fisheries jurisdiction that would potentially be affected by the proposed action. Specifically, these are the chinook, coho and pink salmon fisheries. EFH includes all streams, lakes, ponds, wetlands, and other currently viable water bodies and most of the habitat historically accessible to salmon. Activities occurring above impassable barriers that are likely to adversely affect EFH below impassable barriers are subject to the consultation provisions of the Magnuson-Stevens Act.

The Magnuson-Stevens Act requires consultation for all Federal agency actions that may adversely affect EFH. EFH consultation with NMFS is required by Federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the Magnuson-Stevens Act, the NMFS is required to provide EFH conservation and enhancement recommendations to Federal and state agencies for actions that adversely affect EFH. Wherever possible, NOAA Fisheries utilizes existing interagency coordination processes to fulfill EFH consultations with Federal agencies. For the proposed action, this goal is being met by incorporating EFH consultation to the Endangered Species Act Section 7 consultation, as represented by this Biological Evaluation.

8.2 Location

The location of activities covered by this assessment has been described in detail earlier in this document (see Section 2.3). The RGP is intended to cover the specified activities in the Columbia River between Rock Island and Chief Joseph Dams and in the Okanogan River from River Mile 5 to its mouth at the Columbia River within Chelan, Douglas, and Okanogan Counties in the State of Washington.

8.3 Description of Proposed Activities

The activities covered by this assessment have been described in detail earlier in this document (see Section 2.2). Projects to be authorized under this RGP include installation, replacement, repair or modification of a residential overwater structure consisting of a pier and/or ramp and/or float(s). Overwater structures include piers, ramps, floats, and their associated structures, such as chain and anchors for floats, ladders, and swim steps. A modified structure may be different in kind from the existing structure. For example, an existing float may be modified to a pier, ramp and float. The RGP would authorize the installation, replacement, repair or modification of one overwater structure per upland residential waterfront property owner or one joint-use overwater structure for two or more adjacent waterfront property owners. The proposed project must comply with the conservation measure and construction specifications detailed in Section 7 of this report.

8.4 Potential Adverse Effects of the Proposed Action

The potential effects of the proposed action are discussed in detail in Section 5 of this document. Pacific salmon populations utilize the action area primarily as a migratory corridor to upstream and tributary spawning areas, although some spawning occurs in dam tailrace areas and some beach spawning occurs. Within lake and pool habitats, the proposed actions may result in temporary increases in suspended sediment during construction and future use; however, turbidity is expected to be short-term. The required enhancement of shoreline riparian areas will improve existing degraded riparian conditions. New structures will be constructed in deeper water to minimize impacts to littoral habitats and designed to provide minimal shading and cover to predatory fish. Incorporation of conservation measures required by the RGP will generally improve habitat conditions (see Section 7).

8.5 Conservation Measures

Conservation measures are included for all actions covered under this RGP and are detailed in Section 7 of this report. Conservation measures will generally lead to the improvement of habitat, including EFH, in the action area.

8.6 Conclusions

In accordance with the Essential Fish Habitat (EFH) requirements of the Magnuson-Stevens Fishery Conservation and Management Act, the Corps has determined that the proposal would not adversely impact EFH utilized by pacific salmon species. It has been determined that the proposed action will not adversely affect EFH for federally managed fisheries in Washington waters.

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Appendix A. Status Report for Mitigation Construction

APPENDIX A

Status Report for Mitigation Construction on RGP-5-2002

Mid-Columbia and Lower Okanogan River Residential Piers.

Within one (1) year of the date your permit was issued, submit this completed form to: U.S. Army Corps of Engineers, Regulatory Branch, P.O. Box 3755, Seattle, WA 98124-3755. You must submit a new form annually until the Corps accepts your as-built drawings of the mitigation construction.

Corps Reference Number: ______________________

Date the Corps Issued Your Permit: ______________________

Date this Report is Due: ______________________

Units of Mitigation Required by Corps: ______________________

Your Name: ____

Your Address: ____

Your City/State/Zip Code: ____

You must attach to this form: ☒ As-built drawing(s) of mitigation area, and
☒ Photographs of the mitigation area.

Date overwater structures removed: ____

Date hardened shoreline removed: ____

If plantings were installed:
Each unit of mitigation requires a 20-foot long by 10-foot wide vegetation strip established along the ordinary high water (OHW) line. Conditions of your Corps permit require that you plant at least 2 trees and 15 shrubs in each mitigation unit. The vegetation you plant must be taken from this list of native species below. Shrubs should be planted at 3-feet-on-center intervals and trees should be planted at 10-feet-on-center intervals. Be sure to protect your plantings from beavers—fencing is recommended.

Name of Species You Planted	Number Planted
Total Planted:	

Native tree list: *Populus trichocarpa, Pseudotsuga menziesii*
Native shrub list: *Salix sitchensis, S. scouleriana, S. exigua, S. prolixa, S. lasiandra, Cornus stolonifera*

Appendix B. Mitigation Monitoring Report

APPENDIX B

Mitigation Monitoring Report for RGP-5-2002

Mid-Columbia and Lower Okanogan River Residential Piers.

Submit this completed form to: U.S. Army Corps of Engineers, Regulatory Branch, P.O. Box 3755, Seattle, WA 98124-3755. A completed form must be submitted 1, 2, 3, 4 and 5 years after the Corps accepts your as-built drawing of the mitigation area.

Corps Reference Number: ______________________

Date Your As-Builts Were Accepted by the Corps ____________

Date This Report Is Due: ______________________

Units of Mitigation Required by the Corps: ______________

Your Name: ____

Your Address: ______________________________________

Your City/State/Zip Code: ____________________________

You must attach to this form: ☒ Photographs of the mitigation area taken within the last two months.

Conditions of your Corps permit require 100% survival of all planted trees and shrubs during the first and second years after planting. During the third through fifth years after planting, 80% survival is required. Individual plants that die must be replaced with a species from the list below. At least two trees must be planted in your mitigation area. You must protect your mitigation area against animal predation—fencing is recommended.

Date of Inspection	Species name of Dead Plants	Number of Dead Plants	Name of Species Replanted	Number Replanted

Native tree list: *Populus trichocarpa, Pseudotsuga menziesii*
Native shrub list: *Salix sitchensis, S. scouleriana, S. exigua, S. prolixa, S. lasiandra, Cornus stolonifer*

Appendix C. Specific Project Information Form and ESA Tracking and Notification Form

APPENDIX C

US Army Corps of Engineers

REGIONAL GENERAL PERMIT # APPLICATION, SPECIFIC PROJECT INFORMATION FORM, AND ESA TRACKING AND NOTIFICATION FORM

Mid-Columbia River and Lower Okanogan River Residential Piers.

USFWS Programmatic Reference:
NMFS Programmatic Reference:

A. **Date**: ______________________

B. **Applicant**: ______________________________ **Corps Reference No.**: ____________________

Address: ____

City: ______________________________ State: __________ Zip: ______________

Phone (home):__________________ (work):__________________ Fax:________________

C. **Agent:** ____

Address: ____

City: ______________________________ State: __________ Zip: ______________

Phone (work):__________________ Fax:__________________

D **Location(s) of Activity:**

Quarter Section: _________ Section: _________ Township: _________ Range: _________

Latitude: ______________________ Longitude: ______________________

Street address: ____

Waterbody: _ County: ______________________

E **Use type:** ☐ Private recreation ☐ Joint-use (requires at least two owners of contiguous residential waterfront property, or a homeowner's association).
List name of joint-use property owners: ______________________________________

____

F. **Conservation Measures and Construction Specifications:** In order to be authorized under this Regional General Permit (RGP), all applicable Conservation Measures and Construction Specifications must be implemented. Check each item that you agree to implement. State "not applicable" next to items that do not apply to your project. For example, if you will not install piling, write "not applicable" next to the item listing the piling requirements.

☐ 1. **Piling**. Piling shall be white in color. Piling shall be spaced at least 18 feet apart from one another on the same side of any component of the structure. Piling diameter shall not exceed four inches, or five inches if encased in a polyvinylchloride (PVC) sleeve.

☐ 2. **Floats**. Floats shall not exceed dimensions of 8- by 20-feet. Freeboard height[a] on the float shall be at least 10 inches. Float materials contacting the water shall be white in color or translucent. Grating or clear translucent material (e.g., acrylic or high density polyethylene) must be installed on at least 60 percent of the surface area of the float. Grating must have at least 60 percent open area[b]. Clear

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[a] *Freeboard height* is the distance from the top of the float decking to the water surface.
[b] The *opening size* of grating is the area enclosed between the rectangular bars and cross rods in bar grating, or the area enclosed between the bonds and strands in expanded grating. The *percent open area* is a relative measure of the degree light can pass through grating. The manufacturer may provide this value. Otherwise, it can be calculated

translucent material must have greater than 90 percent light transmittance as rated by the manufacturer. Skirting is prohibited on the float. On joint-use structures, two floats may be installed.

☐ a. **Permanent Floats**. The landward end of any float shall be located in water that has a depth of at least 25 feet below the plane of ordinary high water (OHW)[c]. To determine water depth, a depth finder or plumb bob may be utilized.

☐ b. **Temporary Floats**. A temporary float may be installed in locations where water depth at the landward end of the float is less than 25 feet but at least 8 feet below the plane of OHW. The temporary float must be installed in a location where the water depth fronting the property is greatest. Temporary floats shall be removed from the water annually from March 1 through June 30.

☐ 3. **Piers and ramps**. Piers and ramps shall be no more than four feet wide and shall be elevated at least two feet above the plane of OHW. Where pertinent information is submitted to the Corps, a greater width is allowed to accommodate persons with disabilities. Piers shall extend a minimum of 20 feet waterward from the OHW line. Grating or clear translucent material shall cover the entire surface area of the pier and ramp. The grating must have at least 60 percent open area. Clear translucent material must have greater than 90 percent light transmittance as rated by the manufacturer. Skirting is prohibited on piers and ramps.

☐ 4. **Preservatives**. Any paint, stain or preservative applied to components of the overwater structure[d] must be completely dried or cured prior to installation. Creosote and pentachlorophenol preserved wood are prohibited from use on overwater structures authorized by this permit.

☐ 5. **Construction Timing**. In order to protect Columbia River bull trout, upper Columbia River steelhead, upper Columbia River spring chinook, and the bald eagle, work must comply with one of the following work windows. The main work window for fish species is July 1 through February 28. Variations in this work window are based on the distance of the proposed project to the nearest bald eagle nest and wintering concentration (see below). The Corps will coordinate with the U.S. Fish and Wildlife Service to determine the appropriate work window for the site. The prospective permittee agrees to abide by the work window established by the Corps.

- 1a Piles will be installed
  - 2a Pile installation will be done manually (e.g., with a sledge hammer) or with a vibratory pile driver
    - 3a Wintering bald eagle concentration is within ¼ mile of the project site
      - 4a Bald eagle nest is within ½ mile of the project site: Aug 16 – Oct 30
      - 4b No bald eagle nests within ½ mile of the project site: Jul 1 – Oct 30
    - 3b No wintering bald eagle concentrations are within ¼ mile of the project site
      - 5a Bald eagle nest is within ½ mile of the project site: Aug 16 – Dec 31
      - 5b No bald eagle nests within ½ mile of the project site: Jul 1 – Feb 28
  - 2b Pile installation will be done with an impact hammer (e.g., diesel, hydraulic)
    - 6a Wintering bald eagle concentration is within 1 mile of the project site
      - 7a Bald eagle nest within 1 mile of project site: Aug 16 – Oct 30
      - 7b No bald eagle nest within 1 mile of the project site: Jul 1 – Oct 30
    - 6b No wintering bald eagle concentrations within 1 mile of the project site
      - 8a Bald eagle nest within 1 mile of the project site: Aug 16 – Dec 31
      - 8b No bald eagle nest within 1 mile of the project site: Jul 1 – Feb 28
- 1b No piles will be installed
  - 9a Bald eagle wintering concentration within ¼ mile of the project site
    - 10a Bald eagle nest within ¼ mile of the project site: Aug 16 – Oct 30
    - 10b No bald eagle nest within ¼ mile of the project site: Jul 1 – Oct 30
  - 9b No bald eagle wintering concentration within ¼ mile of the project site
    - 11a Bald eagle nest within ¼ mile of the project site: Aug 16 – Dec 31
    - 11b No bald eagle nest within ¼ mile of the project site: Jul 1 – Feb 28

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by dividing the opening size by the sum of the opening size plus the surface area of a single unit of rectangular bars and cross rods.

[c] The *Ordinary High Water* (OHW) mark for the Columbia River is at an elevation of 781 feet between Wells and Chief Joseph dams, 707 feet between Rocky Reach and Wells dams, and 613 feet between Rock Island and Rocky Reach dams (Corps of Engineers datum). For the Okanogan River, it is the visible line on the banks where the presence and action of waters are so common as to leave a mark upon the soil or vegetation.

[d] *Overwater structures* include piers, ramps, floats, and their associated structures. Associated structures include chain and anchors for floats, ladders, and swim steps.

☐ 6. **Habitat Features**. Existing habitat features (e.g., large and small woody debris, substrate material, etc.) shall not be removed from the riparian or aquatic environment. If invasive weeds (e.g., milfoil) are present, removal may occur by non-chemical means only with authorization from the Washington State Department of Fish and Wildlife.

☐ 7. **Mitigation Measures**. While the above-described construction measures will minimize impacts to the aquatic environment due to the individual structures, because of cumulative impacts of numerous structures to be authorized under this RGP, mitigation measures must be implemented. Overwater structures have the potential to degrade or destroy important habitat for threatened or endangered fish species. These mitigation measures will restore or create important fish habitat to offset the impact of the project.

The number of "Mitigation Units" required is dependent upon the scope of the proposed work and the existing environmental conditions.

<u>One</u> Mitigation Unit consists of <u>one</u> of the following categories of activities, which are ranked below in order of preference by the Corps. If the first category cannot be met, the applicant must justify to the Corps why it cannot be met. Category 1 and 2 mitigation is important because the permanent removal of shoreline vegetation for bulkhead construction or unobstructed views may affect the forage base of ESA-listed salmonids by reducing litter and nutrient inputs to the aquatic environment. Category 3 mitigation is important because existing man made structures can degrade the natural habitat by increasing shading, displacing the substrate, or leaching contaminants.

1	Planting overhanging vegetation along the shoreline immediately landward of OHW in a plot **20-feet long by 10-feet wide** OR
2	Removal of **10 linear feet** of hardened shoreline and planting overhanging vegetation in the removal area
3	Removal of **100 square feet** of existing in-water human-made structures (e.g., pier, piling, human-made debris, concrete, asphalt, etc.) or an equivalent of what is being constructed (e.g., proposed driving of 6 piles, removal of 6 derelict piles).

The following list identifies how many Mitigation Units are required for different situations. The units do not have to be in the same category. For example, if 2 mitigation units are required, the applicant can propose to remove 100 square feet of an existing pier and plant one (1) plot of overhanging vegetation.

a. One unit of mitigation is required for all new overwater structures authorized by this RGP.
b. One unit of mitigation is required if the RGP is used to repair, replace, or modify an existing structure and the footprint of the proposed structure is larger than the footprint of the original structure.
c. No mitigation is required if the RGP is used to repair, replace, or modify an existing structure and the footprint of the proposed structure is smaller than or equal to the footprint of the original structure.
d. One unit of mitigation is required on any site where Corps-required mitigation has been removed.

☐ 8. **Mitigation Planting**. The purpose of mitigation planting is to establish a riparian plant community and associated food web that can be utilized by migrating salmonids as they pass through the project area. To this end, the prospective permittee is required to establish and preserve mitigation plantings at the project site for the duration that the overwater structure is in place. The mitigation planting will include native shrubs (*Salix sitchensis, S. scouleriana, S. exigua, S. prolixa, S. lasiandra, Cornus stolonifera*) and trees (*Populus trichocarpa, Pseudotsuga menzeisii*). The shrubs will be planted at intervals of 3-feet on center, and the trees will be planted at intervals of 10-feet on center. At least two trees will be included in each unit of mitigation planting. Prior to issuance of an RGP, the Corps must approve the prospective permitte's mitigation plan. The mitigation planting must be constructed within 12 months of the Corps' issuance of an RGP to the permittee.

☐ 9. **Mitigation Planting Performance Standards**. One hundred percent survival of all planted trees and shrubs is required during the first and second years after planting the mitigation units. During the third through fifth years after planting, 80 percent survival is required. The permittee must protect the mitigation units against predation—the Corps recommends fencing. Individual plants that die must be replaced with native shrubs and trees taken from the species list above.

☐ 10. **Mitigation Reports.** Mitigation reports must be submitted to the Corps for all projects as follows:

a. A status report on mitigation construction, including as-built drawings, must be submitted to the Corps 12 months from the date the Corps issues an RGP to the permittee. Status reports on mitigation construction will be due annually to the Crops until the Corps accepts the as-built drawings. The permittee can meet this reporting requirement by submitting to the Corps a completed *Status Report for Mitigation Construction*, found in Appendix A of the RGP.

b. For mitigation planting, monitoring reports will be due annually for 5 years from the date the Corps accepts the as-built drawings. The mitigation monitoring report will include written and photographic documentation on tree and shrub mortality and replanting efforts. The permittee can meet this reporting requirement by submitting to the Corps a completed *Mitigation Monitoring Report*, found in Appendix B of the RPG.

☐ 11. **Heavy Equipment.** If heavy equipment is used to accomplish the work, the equipment shall be clean and free of external oil, fuel, or other potential pollutants. All equipment shall be inspected daily prior to use to ensure the equipment has no fluid leaks. Should a leak develop during use, the leaking equipment shall be removed from the site immediately and not used again until it has been adequately repaired. No equipment may be stored or fueled so close to a surface water that the activity could adversely affect the waterbody.

☐ 12. **Operation of Equipment.** Heavy equipment shall be operated from on-shore staging areas, with the exception of an excavator arm or bucket. Pile drivers shall use constructed work platforms (e.g., a barge).

☐ 13. **Spill Prevention, Control and Containment (SPCC) Plan.** If heavy equipment is used to accomplish the work, a SPCC plan must be implemented. A copy of the SPCC plan must be submitted to the Corps prior to construction.

G. Proposed work (choose one):

☐ Install pier
☐ Install pier and ramp
☐ Install pier and float(s)
☐ Install pier, ramp, and float(s)
☐ Install ramp
☐ Install ramp and float(s)
☐ Install float(s)

H. **For repair, replacement or modification of an existing structure (choose one):**

☐ Footprint of the proposed structure is larger than the footprint of the existing structure.
☐ Footprint of the proposed structure is less than or equal to the footprint of the existing structure.

I. **Float(s) description (choose one):**

☐ One temporary float
☐ One permanent float
☐ Two temporary floats
☐ Two permanent floats

J. **Piling installation method (choose one):**

☐ Manually (e.g., sledge hammer)
☐ Vibratory pile driver
☐ Impact hammer (e.g., diesel or hydraulic)
☐ No piling will be installed

K. **Prior mitigation planting at the site (choose one):**

☐ Prior to this application, the Corps required mitigation on the private property or joint-use properties and the mitigation is maintained[e].
☐ Prior to this application, the Corps required mitigation on the private property or joint-use properties and the mitigation no longer exists.
☐ Prior to this application, the Corps required no mitigation on the private property or joint-use properties.

L. **Number of mitigation unit(s) required:**______________________________

M. **Type of mitigation proposed:**

☐ Planting a 20- by 10-foot vegetation strip with overhanging native shrubs and trees.
☐ Removal of 10 linear feet of hardened shoreline armoring and planting overhanging native trees and shrubs in the removal area.
☐ Removal of 100 square feet of existing in-water, human-made structures (e.g., pier, piling, human-made debris, concrete, asphalt, etc.), or an equivalent of what is being constructed (e.g., proposed driving of six piles, removal of 6 derelict piles).

N. **Essential Fish Habitat acreage** (footprint, in square feet, of overwater structure):______________________

[e] *Maintained* means the size of the mitigation unit(s) is the same as approved by the Corps and plant survival is greater than or equal to 80 percent.

O. **Drawings:** Attach copies of vicinity map and project drawings (plan and elevation views required). Photographs are optional.

P. **Mitigation unit(s):** Attach a plan-view of your mitigation plan. The plan should include location of the mitigation unit(s) relative to the OHW line and proposed overwater structure. All planting plans must include the number and type of species you will plant, and the method you will use to protect plants from predation.

APPLICATION IS HEREBY MADE FOR A PERMIT OR PERMITS TO AUTHORIZE THE ACTIVITIES DESCRIBED HEREIN. I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THIS APPLICATION, AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, SUCH INFORMATION IS TRUE, COMPLETE, AND ACCURATE. I FURTHER CERTIFY THAT I POSSESS THE AUTHORITY TO UNDERTAKE THE PROPOSED ACTIVITIES. I HEREBY GRANT TO THE AGENCIES TO WHICHTHIS APPLICATION IS MADE, THE RIGHT TO ENTER THE ABOVE-DESCRIBED LOCATION TO INSPECT THE PROPOSED, IN-PROGRESS, OR COMPLETED WORK. I AGREE TO START WORK <u>ONLY</u> AFTER ALL NECESSARY PERMITS HAVE BEEN RECEIVED.

Signature of Applicant	Date
Signature of Authorized Agent	Date
Signature of Contractor	Date

Section 10. Addendum dated 12 March 2003: Ute Ladies'-Tresses

3.2.8 Ute Ladies'-Tresses (*Spiranthes divulialis*)

Ute ladies'-tresses was federally listed as a threatened species on February 18, 1992 (57 FR 2048, USFWS 1992). This plant is known from eight states: Nevada, Utah, Colorado, Idaho, Nebraska, Wyoming, Montana, and Washington (WNHP and BLM 1999). Ute ladies'-tresses was listed by the USFWS primarily due to habitat loss and modification and vulnerability due to small population size (USFWS 1992).

Ute ladies'-tresses is a member of the orchid family (Orchidaceae). It is a perennial terrestrial orchid with usually one stem, 20 to 50 cm tall, arising form tuberously thickened roots. Leaves are narrow, about 1 cm wide and 28 cm long, that become reduced in size going up the stem. The inflorescence consists of a few to many white or ivory flowers clustered in a spike of 3-rank spirals at the top of the stem. The sepals and petals are ascending or perpendicular to the stem (MNHP 1998). Although this species typically flowers in August-early September, the bloom period can range from July to early October (57 FR 2048). Similarity to other orchid species of the same genus requires identification be made when plants are in bloom.

Habitat loss and degradation from agricultural and urban development and hydrological modifications are the primary threats to population sustainability of the species.

3.2.8.1 Biological Requirements

Ute ladies'-tresses is endemic to mesic or wet meadows fed by groundwater discharge, along wetlands, seeps, and alkaline flats, and in open intermontane valley bottoms ranging in elevation from 1,500 to 7,000 feet. The species prefers relatively open areas with low vegetation cover (MNHP 1998). Known occurrences of Ute ladies'-tresses in Washington include periodically flooded alkaline flats (moist meadow) and river and pond fringes, including populations along the riparian fringe of the Rocky Reach, Columbia River (Beck Botanical Services 2003). The plant is an early seral species, establishing on newly flooded or disturbed areas. It flowers in late August and may persist underground for several years before emerging above ground (WNHP and BLM 1999). Furthermore, concerning populations within the Rocky Reach, Columbia River, population size and location may vary annually in relation to reservoir water levels (Beck Botanical Services 2003). Its tendency to remain dormant for several seasons or produce only vegetative shoots during a season makes it even more difficult to identify, count and monitor (Calypso Consulting 2000). Orchids generally require symbiotic associations with mycorrhizal fungi for seed germination. Observations indicate that bumblebees are the most important pollinators for this species (WNHP and BLM 1999).

3.2.8.2 Designated Critical Habitat

The USFWS has not designated critical habitat for Ute ladies'-tresses.

3.2.8.3 Factors of Decline

Urban development, stream channelization, water diversions, and other watershed and stream alterations in riparian and wetland habitats have degraded or removed existing and potential habitat for Ute ladies-tresses. Modifications to plant community composition and structure or site hydrology are primary limiting factors. Ute ladies'-tresses cannot compete with nonnative invasive species, such as reed canarygrass, and are shaded out by trees and shrubs (Calypso Consulting 2000). Replacement habitats that discourage pollinators or pollen-producing plants limit the species' opportunity to reestablish in an area.

3.2.8.4 Population Trends of the Species

Ute ladies'-tresses was first typed as a unique species in 1984, separating it from other Spiranthes with which it was formerly confused (USFWS 1992). At the time of listing, populations were only known to occur in certain riparian areas in Colorado, Utah, and Nevada. Since that time, populations have been located in Wyoming, Nebraska, Montana, Idaho, and Washington.

In Washington, four occurrences are known. Ute ladies'-tresses was first collected in 1997 (Okanogan County) from the north-central portion of the state in the Okanogan Highlands physiographic province as described by Franklin and Dyrness (WNHP 1999). More recently, three populations of Ute ladies'-tresses have been identified from the upper end of the Rocky Reach, Columbia River in August 2000 (Beck Botanical Services 2003).

5.2.3.1 Reduced Shoreline Vegetation

Piers and other shoreline modifications often preclude riparian vegetation. The reduction in shoreline woody vegetation has likely reduced LWD recruitment potential, which, in-turn, reduces habitat components for salmonids. LWD is an important in-water component contributing to the production of invertebrate prey for salmonids. LWD also traps sediments, stabilizes banks, and protects shorelines from wave scour. Bald eagles use perch trees adjacent to the action area for nesting, roosting, and perching during winter foraging (Rodrick and Milner 1991). Removal of mature trees would also impact bald eagle feeding and breeding patterns.

The removal of riparian vegetation could also impact Ute ladies'-tresses. As described in Section 3.2.8,this orchid occurs in wet meadows fed by groundwater discharge, along wetlands and in seeps, and in riparian areas (MNHP 2001). No known populations of Ute ladies'-tresses occur within the action area, however this plant species is extremely difficult to identify and suitable habitats do occur within the action area. Undisturbed riparian habitats adjacent to the action area could provide suitable habitat for this orchid.

To reduce long-term impacts to riparian habitats and to improve currently degraded shoreline habitats, riparian vegetation impacted during construction activities will be replaced with native, locally adapted species appropriate for the site whenever practicable. The removal of riparian vegetation would be limited to the minimum amount necessary to accomplish each project. (Please refer to Section 7 of this BE for detailed conservation measures.)

New References:

Beck Botanical Services. 2003. Spiranthes Diluvialis Survey, 2002 – Rocky Reach Hydroelectric Project FERC Project No. 2145. Public Utility District No. 1 of Chelan County, Wenatchee, Washington.

Montana Natural Heritage Program. 1998. Montana Rare Plant Field Guide: Spiranathes diluvialis. http://nhp.nris.state.mt.us/plants/index.html Accessed March 7, 2003.